

Similar Students, Different Results: Why Do Some Schools Do Better?

APPENDIX A

Recruiting Schools and Districts for Study Participation

EdSource took on the task of recruiting schools for the study because of its 28-year history in the state, and strong reputation and relationship with districts. The goal was to recruit a large number of schools within the 25th to 35th percentile band to participate, which would be challenging because of the time required by the school: the research team was asking that the principal plus 80% of the school's K-5 classroom teachers complete a long survey that would take approximately an hour of time.

In October of 2004 EdSource contacted all district superintendents by mail and then by phone both to explain the study and obtain permission to contact the district's elementary schools identified for our sample. While senior staff at EdSource made calls to key districts, they also recruited and hired local school board members who were familiar with EdSource to serve on a phone bank for the study. These informed individuals were effective because they understood the dynamics of the district and school environment and the importance of respecting it as they interacted with staff. School board callers served as our research liaisons and worked in shifts so that someone was available during most working hours if a district called for information.

Once a district had given permission for EdSource to contact the targeted elementary school(s) about the study, EdSource mailed letters directly to the elementary schools, letting them know that their superintendent had approved the contact, explaining the importance and scope of the study, and asking them to participate. The letter was clear about the expectation for an 80% K-5 classroom teacher participation rate, and suggested that the school set aside an hour of staff meeting time in January, when the surveys were to be mailed, for survey administration. We suggested that a teacher or administrative support person at the school be designated as the "study coordinator" to issue and collect the teacher surveys and ensure confidentiality. The principal would receive and return his/her survey separately. EdSource offered incentives for participating: a \$25 gift certificate to a bookstore for the study coordinator; and if 80% of a school's classroom teachers and the principal returned completed surveys the school would receive \$100 to use for any purpose, and the school would receive a copy of the lay report of the study findings when it was published.

After receiving a letter requesting their school's participation, some principals returned the enclosed fax-back form indicating that their school would join the study. But the majority of principals did not, necessitating one or more phone calls from the research liaisons. In either case, principals agreeing to participate were asked to send the name of a volunteer coordinator and a list of names of their K-5 classroom teachers. This list let the researchers know how many surveys to send and served as a checklist for the school coordinator who would be retrieving the completed surveys.

154 districts and 269 schools were recruited through this process.

Survey Administration and Retrieval

American Institutes for Research (AIR) researchers joined the research team in December of 2004 and helped oversee the survey retrieval process—partnering with EdSource to train the callers and to develop a script for them to use. From January through February, AIR mailed packets of surveys to the volunteer coordinators as each school made a commitment to participate.

To assure teachers that their responses would remain confidential, we included blank envelopes so they could seal their completed surveys inside before returning them to the coordinator. Once coordinators had retrieved the teacher surveys, they would overnight them in one large envelope. The principal was given an envelope as well and encouraged to mail this back separately to avoid concern that the staff

member serving as coordinator might see the responses. Completed surveys were returned to AIR and then logged into the computer. Each schools' surveys were identified with a similar code so AIR could aggregate one site's results. If schools reported losing or misplacing surveys, EdSource or AIR sent additional ones coded with this same identifier.

EdSource's bank of school board phone callers, or research liaisons, were a critical component both in getting schools to participate and in achieving such a teacher survey return rate. They followed up with phone calls to schools to ensure that as many surveys as possible were being returned. If schools needed help, they had access to an 800 number set up by AIR that routed them to the liaisons who fielded questions and gave encouragement and advice on how to get more teachers to return the surveys. Callers tracked information about schools on a computer log sheet so that if one caller's shift ended, the caller serving in the next shift would have all the pertinent and updated information needed. Each caller recorded a detailed narrative of every conversation with the school so the next caller was familiar with that school's situation before calling. AIR also developed tracking sheets in Excel that included an actual roster with teachers' names and the number of teacher responses needed to achieve the 80% goal. AIR set up a networked computer system that enabled each caller to log into an individual remote desktop and access all the files as well as individual email accounts. This enabled callers to access the schools' files quickly and communicate efficiently with other callers. The full team of callers plus AIR and EdSource personnel met once a week to share concerns and brainstorm solutions or alternative approaches to increase school participation and compliance

Of the 154 districts and 269 schools recruited to participate in the study, 145 districts and 257 schools returned a principal survey and a sufficient number of teacher surveys. The large majority of schools had a minimum of 80% of K-5 classroom teachers returning surveys; many schools returned 100%.

APPENDIX B

Research Methodology and Analyses

Researchers from each of the four collaborating organizations have met biweekly since March 2005 to discuss the data analyses, while the technical team has met more frequently to specify details of the analyses. Data file construction was carried out primarily by AIR under the direction of Ed Haertel, the study's senior technical consultant.

Using a weighted analysis assured that results were statistically representative of all public non-charter elementary schools in the 25th to 35th 2003-04 SCI percentile band. School demographic characteristics and test performance data (API and CSTs) were downloaded from databases available at <http://api.cde.ca.gov/datafiles.asp> and/or <http://ayp.cde.ca.gov/datafiles.asp>. Because the sampling design included stratification according to whether the district was an EdSource Information Service subscriber, this factored into the construction of the weighting variable.

After data cleaning, teacher survey items were screened to assure that within-school consistency of responses was sufficient to provide useful measurements of school characteristics. Using the teacher-level data file, intra-class correlations for teachers within schools and corresponding reliabilities were calculated for each item, and fifteen teacher survey items (roughly 5 percent of all items on the teacher survey) were dropped from further consideration because their reliabilities fell below a threshold of 0.25. Information from the teacher surveys was then aggregated to the school level and then merged with principal survey responses as well as demographic and achievement data from EdSource and the California Department of Education to create the final school-level analysis file.

The next step in the analysis, using the school-level file, was to combine the reliable teacher and principal survey items to create composite variables (scales) representing school qualities, policies, or practices potentially related to academic success. Within the project, these were referred to as "sub-domains," organized into eight "domains." An in-depth analysis of the sub-domains was performed to ensure the included items were positively correlated with achievement and that the groups of items showed adequate internal-consistency reliability. This was done by first calculating the zero-order and partial correlations of each item on the primary outcome of interest (the API) as well as on the individual English Language Arts and Mathematics California Standards Tests (CSTs). Next, the internal consistency of the set of items in each sub-domain was checked by evaluating Cronbach's alpha and checking the dimensionality of each set using factor analytic techniques.¹

Sub-domains were constructed so as to be mutually exclusive; no item was included in more than one sub-domain. While some sub-domains included only a single item, some items were not included in any sub-domain and were dropped from further consideration. Typically, items were dropped because review of the item text or review of response patterns indicated that the items had not functioned as intended.² A very small number of items were dropped because they appeared completely redundant (i.e., were highly correlated) with other items. As with the design of the teacher and principal surveys, the creation of domains and sub-domains was guided by previous theory and research. With one exception, separate sub-domains were created from teacher survey items versus solely from principal survey items; in only one case were teacher and principal responses combined in a single sub-domain. (This combined sub-domain was based on teacher and principal responses to the identical question, "Our school uses a standards-based report card.")

Initially, the 2004 "Growth" API was the primary focus of analyses. When the 2005 "Growth" API was released, analyses were rerun using the 2005 test data and 2005 demographic control variables. Results were essentially unchanged; the 2005 results are the primary reporting focus.

As mentioned previously, a "Growth" API is a cross-sectional measure based on data from a single year. The term "Growth" indicates that it is calculated in the same manner as the preceding year's "Base" API. Thus, the arithmetic difference between current-year "Growth" and prior-year "Base" APIs represents the change in a school's performance from one year to the next. Only cross-sectional measures, not change

¹ Indeed, as a result of the factor analysis some of the original sub-domains were split up into smaller ones.

² This was done by first evaluating the internal consistency of the set of items in each sub-domain using Cronbach's alpha and then checking the dimensionality of each set using factor analytic techniques.

measures, are used in the analyses for the present study. In addition, an outcome variable based on schools' average API between 2002 and 2004, with greater weight on more recent years, was examined. This "API Composite" gave results similar to, but generally weaker than, those for recent single-year API outcome variables.

Results were also examined for school-level variables created by averaging CST scores in English/Language Arts across all K-5 grades within the school, and similarly for Mathematics. Analyses of these separate outcome measures showed little difference in variables predictive of performance in one subject area or the other.

As mentioned above, the sub-domains were organized into eight categories (domains) representing areas of focus such as the school's instructional program, parental involvement, and use of achievement data. For the primary regression analyses, we first regressed the outcome (e.g., 2005 Growth API) on all sub-domains within a given domain, together with a set of demographic variables chosen to control for residual effects of socioeconomic status and student characteristics that were still present within the narrow SCI band specified in framing the study population. The primary statistic of interest in examining these regressions was the percent of variance accounted for by the sub-domain composite variables (adjusted R^2).³

For each domain, we next fit a parsimonious regression model that included school demographic characteristics and only a subset of composite measures of teacher and principal responses that collectively accounted for a substantial portion of the variation in API scores that was captured using the entire domain. We then used the estimates from this regression model to predict the API for each school, but assuming each school had demographic characteristics equal to the average of the schools in the sample. The extent to which these predicted API scores vary across schools gives us a measure of the extent to which the composite variables from this domain account for variation in API scores. We report the difference in predicted API scores between schools at the 75th and 25th percentiles of the distribution of predicted scores. This difference can be interpreted as the difference in API scores we would expect to observe between two schools (with identical demographic characteristics), one of which scored at the 75th percentile on the combined level of the composite variables in the domain, and the other of which scored at the 25th percentile. A final analysis employed the same procedures, but included the final subsets of sub-domains from all eight domains in a single model.

All figures giving percent of variance explained are adjusted for the number of predictors in the model. This adjustment facilitates meaningful comparisons among models with different numbers of predictors. However, in cases where the sub-domains not included in the final model contribute very little to the prediction, the adjustment can occasionally result in a higher percent of variance explained by the sub-domains in the final model than in the full set of sub-domains.

³ This is measured as the difference in explained variance between the full model containing both the sub-domain and demographic variables and the baseline model containing only the demographic control variables.

Magnitude of API Differences (holds demographics constant at sample mean)		
Domain	Standard Deviation of Predicted API Distribution	Interquartile Range of Predicted API Distribution
Implementing a Coherent, Standards-Based Instructional Program	17.6	22.0
Ensuring Availability of Instructional Resources	16.9	22.4
Using Assessment Data to Improve Student Achievement and Instruction	16.7	22.1
Prioritizing Student Achievement	16.3	22.6
Encouraging Teacher Collaboration and Professional Development	11.0	14.2
Enforcing High Expectations for Student Behavior	12.3	16.6
Involving and Supporting Parents	9.9	14.4

APPENDIX C

Descriptive Statistics of the Schools in Our Sample and Their Student Populations⁴

Overall Demographics and Performance of Participating Schools

In 2003, when the study's sample was derived, 547 non-charter elementary schools were in the 25th-35th percentile of the school characteristics index (SCI). Out of the 269 schools identified from this group for the study's sample, 257 agreed to participate in the study and returned the principal's survey and at least some teacher surveys, with the overwhelming majority returning at least 80% of the teacher surveys. These 257 schools are referred to below as "participating" or "sample" schools. The other 290 schools that make up the rest of the 547 non-charter elementary schools in the 25th-35th percentile band of the SCI are referred to below as "non-participating" or "non-sample" schools.

Schools in 145 school districts participated in the study. Fifty-six of these districts had more than one school in the study. According to 2004-05 data, the average school enrollment was 588 students. Of the 257 participating schools:

- 33% were situated in elementary school districts and the remaining 67% in unified school districts.
- 15% of the schools operate on a year-round calendar.
- 98% received Title I funding and 34% participated in Program Improvement—meaning that these Title I schools had not met the federal Adequate Yearly Progress benchmark for at least two consecutive years.

Student Demographics

The student population attending the participating schools was diverse and facing particular challenges. The median value of a few variables illustrate the challenges. (The median is found by arranging schools in order of their values on a particular variable and finding the value in the middle of the group. As a result, there is no one school that represents the median on all of these factors.) At the median sample school, 40% did not speak English as their primary language and 78% participated in the free and reduced-price meals program for low-income families. Among all sample schools, the percent of English learners ranged from 1% to 80%, and the percent of students participating in the free and reduced-price meals program ranged from 17% to 100%.

The median percentage of students by ethnicity at the sample schools was as follows: 68% Hispanic, 14% white, 4% African American, and 3% Asian. The median value for the combination of American Indian, Filipino, Pacific Islander, and multiethnic students, along with those who did not indicate an ethnicity, was 4%. In most but not all schools the majority population was Hispanic. The highest percentage of students of a given ethnicity found in any one school was: 99% Hispanic, 94% African American, 54% white, 42% Asian, 38% American Indian, 31% Filipino, and 10% Pacific Islander. Conversely, the lowest percentage for most ethnic groups was 0%, but all schools had at least 1% Hispanic students.

In the median sample school, 32% of students had parents who were not high school graduates. The median values for other parental education levels were 33% high school graduate, 21% some college, and 11% completed college or graduate school.

⁴ Data used in this section is from 2004-05 unless otherwise noted.

School Performance

The 2005 Growth API for the average school participating in the study was 702. The lowest-performing school scored 569, and the highest performing school scored 821.

The state also assigns a rank from one to 10 to each school in the state at the start of each API cycle, with a 10 identifying the 10% of schools that are the highest performing. For the 2004 Base API, none of the schools in the study was ranked a 10. Only 4% ranked at seven or higher, meaning within the top 40% of elementary schools. Conversely, 7% were ranked at one, the bottom decile. The remaining 89% of schools ranked from two to six, with the majority a three or four.

Comparing sample schools to non-participants and to all California elementary schools

School Characteristics

Participating, non-participating, and all elementary schools had a similar percentage of schools in unified and elementary districts.

The average enrollment in our sample schools was slightly smaller (588 students) than that of non-participating schools (630) and slightly larger than the average California elementary school (567). Class sizes, however, were similar for all three categories. While only 15% of the sample schools operated year-round, more than twice as large a proportion of the non-participating schools (31%) did. This is compared to 20% of all California elementary schools.

Regarding geographic representation, the participating schools were fairly representative of elementary schools statewide, but not as representative of schools in the 25th-35th percentile of the SCI. The percentages of schools from each of three regions—northern, southern, and central California—were about the same among schools participating in the study and those statewide. However, considering just the SCI band, schools in northern and central California were somewhat over-represented among participants, and those in southern California were somewhat under-represented. The table below gives the exact percentages.

Percent of Schools by Region

Region	Sample Schools	Non-Sample Schools	All California Elementary Schools
Northern (Santa Cruz, Santa Clara, Merced, Madera, Mono, and all other counties northward)	34%	29%	38%
Central (areas between designated northern and southern areas)	13%	6%	8%
Southern California (San Luis Obispo, Kern, San Bernardino, and all other counties southward)	53%	65%	54%

Student Demographics

Sample schools and non-participating schools had similar ethnic compositions as well as similar percentages of English learners and students from low-income families.

As the table below shows, the median percentages of student ethnicities among sample and non-sample schools paralleled each other quite closely. One small exception can be found in the percentage of white students, with the median sample school having 14% as opposed to 10% in the median non-sample school. On the other hand, the sample schools looked somewhat different than elementary schools

statewide. In particular, the median sample school had a considerably smaller percentage of white students and larger percentage of Hispanic students than the median school statewide.

Ethnic Composition of Participating, Non-participating, and all Elementary Schools

Ethnicity	Median Values for:		
	Sample Schools	Non-Sample Schools	All California Elementary Schools
African American	4%	5%	3%
American Indian	0.4%	0.4%	0.4%
Asian	3%	2%	3%
Filipino	1%	1%	1%
Hispanic	68%	68%	41%
Pacific Islander	0.3%	0.4%	0.3%
White	14%	10%	28%

In terms of English learners and students from low-income families, sample schools were very similar to non-participating schools but quite different from the statewide set of elementary schools. The English learner population was 40% in the median participating school, 41% in the median non-participating school in the band, but only 24% in the median school statewide. Similarly, for the free and reduced-price meals program, the median participating and non-participating schools both had 78% of students in the program, whereas only 58% of students from all California elementary schools were in it.

Regarding parental education levels, the study's schools and non-participating schools had a very similar proportion of students with parents who did not have a college degree. In the sampled schools, the median was 89% while in the non-participating schools, the median was 88%. Statewide, the median was 78%.

School Performance

Participating schools had slightly higher 2005 Growth API scores on average than non-participating schools in the band, as indicated in the table below. As one would expect, the API scores among all California elementary schools had a higher maximum, higher average, and lower minimum than the scores of the participating and non-participating schools.

2005 Growth API Summary

	Sample Schools	Non-Sample Schools	All California Elementary Schools
Maximum	821	848	999
Average	702	696	753
Minimum	569	593	317

Subscription to EdSource Materials

EdSource produces publications on California education policy, and the largest subscriber group to these publications is school district offices. Among the 547 schools in the 25th-35th percentile of the SCI, 235 come from districts that subscribe to EdSource materials and 312 do not. Fifty-four percent of the “subscriber” schools, and 41% of the “non-subscriber” schools participated in the study. Capitalizing on the established relationship between EdSource and the subscriber schools, we deliberately over-sampled subscribers to maximize the participation rate. However, we adjusted for the fact that we had a higher percentage of subscribers in our sample through the use of sampling weights.

Within our Sample, Comparing the Highest- and Lowest-performing Schools to the Sample’s Mean/Median on a Variety of Variables

Another way to look at the demographics is by high- and low-performing schools. For this purpose, high-performing schools are those that scored one standard deviation or more above the mean for our sample on the 2005 Growth API. Low-performing schools scored one standard deviation or more below the mean. The following data represent the 38 high-performing and 41 low-performing schools identified in this way.

At the high-performing schools, slightly fewer parents lacked a high school diploma and slightly more had a college degree, as the table below indicates.

Parental Education at the Median School (2003-04)

Parental Education Level	In High-performing Schools	In Low-performing Schools
Not High School Graduate	29%	34%
High School Graduate	36%	34%
Some College	25%	19%
College Graduate	9%	6%
Graduate School	3%	3%

Data: California Department of Education – CBEDS and API Files

Student Demographics in 2004-05 in the Sample, High-performing Schools, and Low-performing Schools

Variable	Median value for:		
	All Schools in Sample	High-performing Schools	Low-performing Schools
% African American	4%	6%	4%
% Asian	3%	3%	2%
% Hispanic	68%	58%	70%
% White	14%	15%	15%
% English Learner	40%	33%	49%
% Free/Reduced-Price Meals	78%	71%	82%
% Parent Not High School Graduate*	32%	29%	34%

**Data for 2003-04*

2004 Base API Scores for the Following Subgroups in all Schools in the Sample, High-performing Schools, and Low-performing Schools.

Subgroup	Median 2004 Base API score for:		
	All schools in Sample	High-performing Schools	Low-performing Schools
African American	655	722	608
Asian	710	866	655
Hispanic	665	720	603
White	734	790	697
Socioeconomically disadvantaged	665	721	613

Summary

While the schools analyzed for this study may have differed from one another in terms of specific poverty levels and other factors, they all shared a relatively high level of challenge compared to other elementary schools in the state. In addition, the sample schools were generally representative of the set of schools of interest—those in the 25th-35th percentile of the school characteristics index. While somewhat different in some ways such as geographic representation, the sample schools and non-participating schools from the SCI band were very similar in key factors such as ethnic composition, the percentage of English learners and low-income students, and parental education.

Appendices A-C from: Williams, T., Kirst, M., Haertel, E., et al. (2005). *Similar Students, Different Results: Why Do Some Schools Do Better? A large-scale survey of California elementary schools serving low-income students*. Mountain View, CA: EdSource.

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