

The Effects of an Early Literacy Formative Assessment System

Background: The best formative assessment programs can enable teachers to better match instruction to student needs by providing them with information on student development and instructional strategies. Historically, San Francisco Unified School District (SFUSD) has not had a common early literacy formative assessment system. During the 2011-2012 school year, the District introduced Phonological Awareness Literacy Screening (PALS) in approximately half of its pre-kindergarten (pre-k), kindergarten and 1st grade classrooms (the PALS pilot). SFUSD randomly chose schools to participate in the pilot, which consisted of: a teacher training on assessment administration and PALS' on-line tool for data analysis; two facilitator trainings on analyzing data, facilitating grade-level meetings and using the on-line system; three assessment administrations; uploading assessment results to the on-line system; and, three grade-level meetings to discuss assessment results. A primary goal of the pilot was to provide teachers with information on students' early literacy skills, as well as a series of opportunities to discuss student progress and develop their early literacy instructional practices. Another important project objective was to establish a common language in early literacy. SFUSD partnered with the Center for Education Policy Analysis (CEPA) at Stanford to help with implementation and evaluation of PALS. The remainder of this brief summarizes CEPA's findings.

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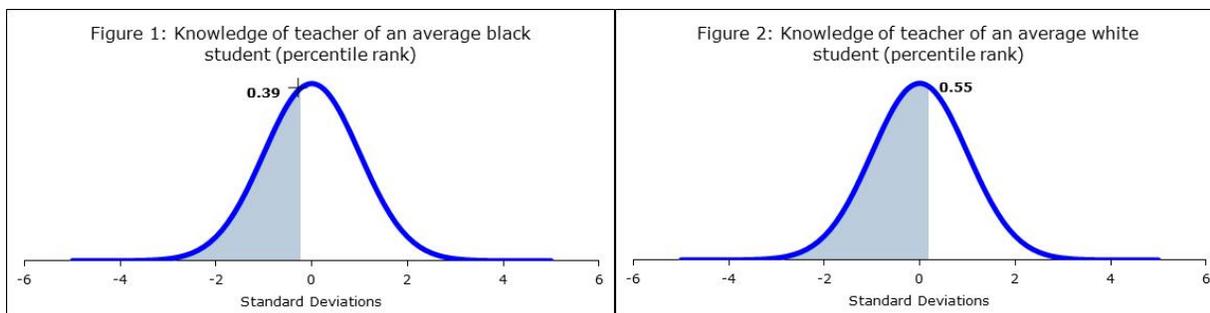
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Analysis #1: Teachers' understanding of their students' abilities – the theory of action behind formative

Black and Hispanic students experience teachers with much lower levels of teacher knowledge of students' skills than white students.

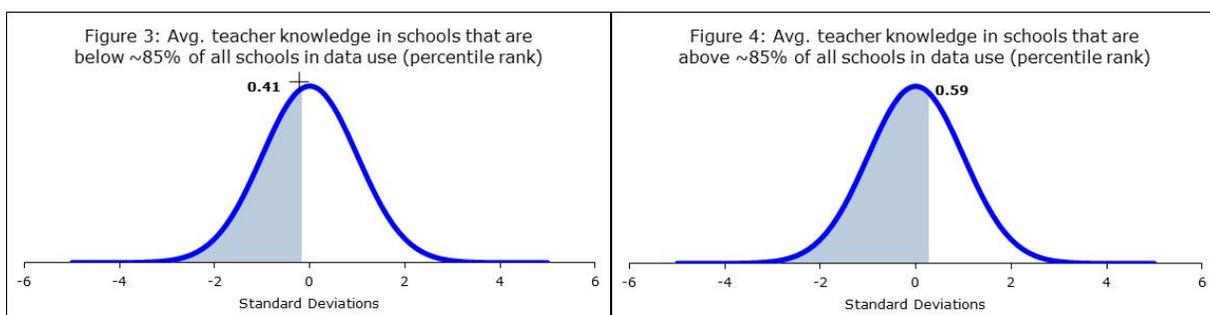
assessment programs is that they can enable teachers to better match instruction to student needs by enhancing teachers' knowledge of their students' skills. Before evaluating the effects of PALS in SFUSD, we wanted to better understand teacher knowledge of students' skills in the District, including its distribution, school processes associated with teacher knowledge of students' skills, and the relationship between teacher knowledge of students' skills and student learning.

We use data from the PALS-pilot teacher survey to construct measures of teacher knowledge of students' skills. First, we look at the distribution of teacher knowledge of students' skills across schools in SFUSD. We find that black and Hispanic students experience teachers with much lower levels of knowledge of students' skills than do white students. For example, the knowledge of an average teacher of black students is below approximately 60% of all teachers. In contrast, the knowledge of an average teacher of white students is above approximately 56% of all teachers (see Figures 1 and 2 on the following page for a visual representation of this difference).



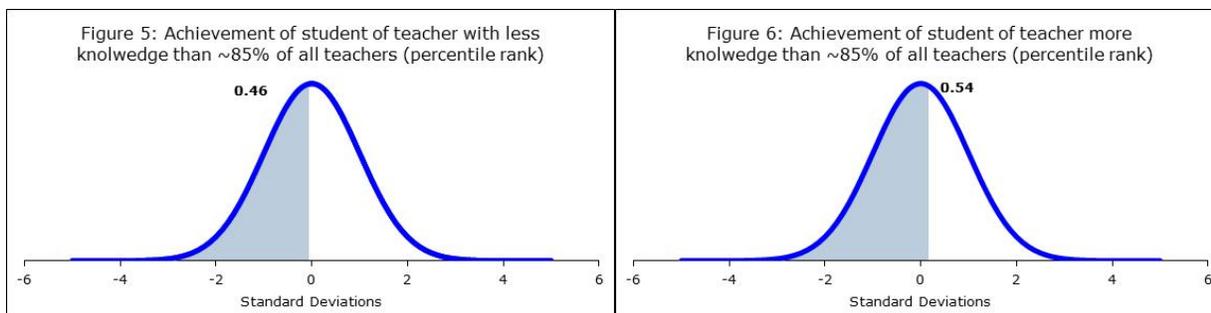
The second aspect of teacher knowledge of students' skills in SFUSD that we examine is school processes associated with knowledge. We are particularly interested in identifying processes of schools with highly knowledgeable teachers. We find that schools that are data-driven have teachers with higher levels of knowledge than other similar schools. Specifically, the average level of teacher knowledge of students' skills in a school that is above roughly 85% of all other schools in terms of its data use is about 18 percentile points higher than the average level of knowledge in a school that is below 85% of all schools (see Figures 3 and 4). One specific school practice that has a strong positive association with teacher knowledge of students' skills is data analysis among teachers across grades. In contrast, teacher knowledge of students' skills is lower than average in schools in which teachers report spending more time discussing district policies, as well as in schools in which many teachers receive feedback from the principal.

Schools that are data-driven have highly knowledgeable teachers; one specific school practice that has a strong positive association with teacher knowledge of students' skills is data analysis among teachers



Finally, we examine the relationship between teacher knowledge of students' skills and student achievement, by comparing teachers in the same schools. We find that a similar student in a class with a teacher who has more knowledge of her students' skills than 85% of all teachers in the District gains roughly 8 percentile points in performance on an early literacy assessment relative to a student in a class with a teacher who has less knowledge of her students' skills than 85% of all teachers in the District (see Figures 5 and 6 on the following page).

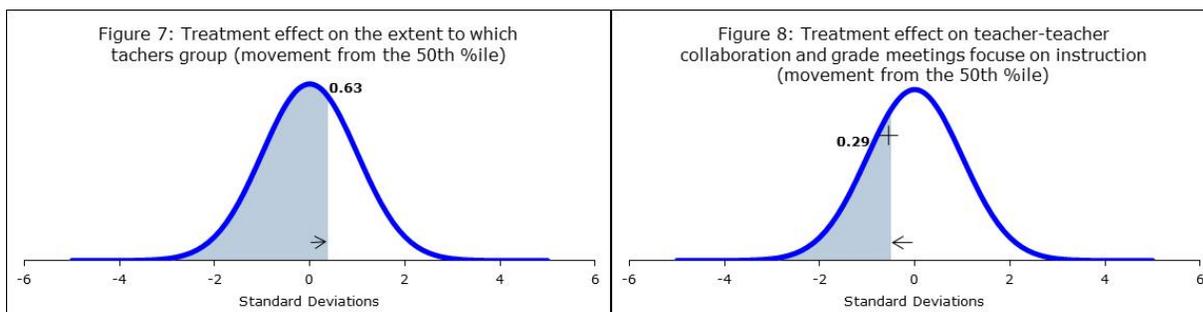
If a student moves from a teacher who has less knowledge than about 85% of all teachers to a teacher who has more knowledge than 85% of all teachers, that student moves from roughly the 46th to 54th percentile.



Analysis #2: The effect of PALS on teacher knowledge of students’ skills, attitudes and practicesⁱ – To

examine the effect of PALS on teacher knowledge of students’ skills, attitudes and practices, we compare teachers in the “treatment” group to those of the “control” group (teachers in PALS and non-PALS schools, respectively), after making a number of statistical adjustments. Surprisingly, PALS did not have an effect on teachers’ understanding of their students’ ability levels; however, there is some evidence that it had a positive impact on the extent to which teachers review data independently, which could be a precursor of teacher knowledge of students’ skills. In addition, teachers in the PALS pilot used reading groups with more of their students than teachers in the control group. Indeed, the PALS implementation had the effect of moving teachers from the 50th to the 63rd percentile in terms of the extent to which they group (see Figure 7). While it appears that PALS teachers engaged more frequently in activities recommended by PALS, there is evidence that they engaged in other activities less frequently than non-PALS teachers, including: giving homework, reviewing student work other than assessment results, participating in grade-level team meetings focused on instruction, and collaborating with other teachers. For example, PALS had the effect of moving teachers from the 50th to 29th percentile in terms of how much they collaborate with each other and in the extent to which they participate in grade-level meetings about instruction (see Figure 8). Finally, PALS teachers reported feeling more overwhelmed by improvement target and initiatives than non-PALS teachers. Thus, in its first year of implementation, PALS increased time on data but decreased time on instruction, perhaps due to a process of transition.

There is some evidence that PALS teachers reviewed data more and used reading groups more extensively than control group teachers; however, it seems that PALS teachers engaged in other instructional practices less frequently.



Analysis #3: The effect of PALS on students’ early literacy skills – Similar to our teacher analysis, in our student analysis we compare “treatment” and “control” group kindergartners’ and first graders’ test

scores. In particular, we examine their spring 2012 scores on early literacy portions of the Stanford Achievement Test – 10th Edition (SAT-10), as well as first graders’ 2013 fall Fountas & Pinnell (F&P) Benchmark Assessment System scores. The latter represent year-two outcomes of kindergartners in the

Students’ early literacy test scores are 5 percentile points higher in schools at about the 85th percentile in term of the extent which they hold more grade-level meetings focused on data, relative to students in schools at the 50th percentile of grade-level data meetings.

original sample. Overall, we find no evidence of a treatment effect with respect to students’ early literacy development. However, we do find treatment effects in particular types of schools. Specifically, students’ early literacy test scores are 5 percentile points higher in schools at about the 85th percentile based on the extent which they hold grade-level meetings focused on data, relative to students in schools at the 50th percentile of grade-level data meetings. In contrast, students’ early literacy test scores are 4 percentile points lower in schools at about the 85th percentile based on the extent which they hold grade-level meetings focused on instruction, relative to students in schools at the 50th percentile of grade-level instructional meetings. Thus, PALS had a more positive effect when teachers spent

time reviewing data but was likely distracting when the focus of discussions was on instruction.

ⁱCaveat regarding analyses 2 and 3: due primarily to test administration irregularities, the treatment and control groups in our analytic sample are unbalanced. In particular, there are more black students but fewer Hispanic students in the treatment group than in the control group. In addition, teachers in PALS and non-PALS schools differ in a number of ways. While the results of analyses 2 and 3 reflect statistical adjustments for these imbalances, it is possible that the treatment and control groups still differ in unobservable ways. If this is the case, then results are biased. One should therefore interpret findings from analyses 2 and 3 as suggestive evidence on the effects of an early literacy formative assessment system.