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TO: Members, Board of Education
Vivian Ekchian, Acting Superintendent

INFORMATIVE

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**SUBJECT: THE EFFECTIVENESS AND DISTRIBUTION OF NATIONAL BOARD
CERTIFIED TEACHERS**

SUMMARY

- Studies of L.A. Unified have found that students of National Board teachers achieve higher test score gains than do students of other teachers, after controlling for prior achievement. Studies of different states and districts arrive at mixed results.
- There is substantial evidence from L.A. Unified and other states that National Board teachers are assigned to lower shares of racial minorities and greater shares of high-achieving students.
- It is unclear from research whether the certification process improves teaching practices.
- There is substantial evidence showing that teachers become less effective during the certification process, suggesting that the application process takes time away from classroom preparation.

Established in 1987, the National Board for Professional Teaching Standards (“NBPTS”) offers an assessment process across multiple subject areas to signify that teachers have achieved a high level of practice. Across the United States, National Board-Certified (“NBC”) Teachers number roughly 100,000 and represent 3% of the national teaching force. Thirty states either offer financial incentives for teachers to complete the NBPTS assessment process or bonuses for NBC teachers. Within L.A. Unified, approximately 4% of teachers are NBPTS-certified.

The purpose of this informative is to discuss the effectiveness of NBC teachers, outline the distribution of NBC teachers, provide evidence on whether or not the process of Board certification improves teacher practices, and discuss policy implications.

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ARE NATIONAL BOARD-CERTIFIED TEACHERS MORE EFFECTIVE THAN OTHER TEACHERS?

Studies of L.A. Unified find that students of NBC teachers achieve higher test score gains, on average, than do students of other teachers, after controlling for prior achievement in a value-added model. However, some studies of NBC teachers in different states and districts arrive at inconsistent results. Studies conducted within LAUSD are discussed first here followed by studies conducted in other states.

Based on an analysis by the Independent Analysis Unit of the Smarter Balanced Assessment Consortium (SBAC) data for grades 4 through 8 in L.A. Unified, the effect of National Board teachers on student test score gains on the SBAC is positive but not large. This finding is based on a value-added model that controls for prior test scores, student ethnicity, student poverty, gender, language learner status, and parent education level. In English language arts, the effect in one year was 0.11 standard deviations of a student test score, or about 11 scale score points. In Math, the effect in one year was 0.06 standard deviations of a student test score, or about 6 scale score points. In other words, students with NBC teachers scored 11 points higher on the English language arts section of the SBAC compared to students without NBC teachers, controlling for prior year's achievement. In math, students scored 6 points higher on average compared to their peers who did not have National Board certified teachers, after adjusting for their previous year's achievement.

The IAU's analysis includes approximately 280,000 students and 4,000 teachers in grades 4-8 in L.A. Unified. Tables 1 and 2 outline the sample size at the student and teacher level, respectively.²

Table 1. Students, grades 4-8, included in IAU's analysis of L.A. Unified

	ELA		Math	
	Students	Percent	Students	Percent
Not NBCT	266,947	93.5%	260,162	94.0%
NBCT	18,576	6.5%	16,478	6.0%
Total	285,523	100.0%	276,640	100.0%

Table 2. Teachers, grades 4-8, included in IAU's analysis of L.A. Unified

	Elementary (G4-G5)		Middle (G6-G8)	
	Teachers	Percent	Teachers	Percent
Not NBCT	3,683	93.9%	3,917	95.1%
NBCT	238	6.1%	201	4.9%
Total	3,921	100.0%	4,118	100.0%

² Data are from 2015-16 school year, with spring 2016 test scores controlled for spring 2015 prior test scores. Data were provided by the District's Office of Data and Accountability.

The analysis is limited to grades 4 through 8 because the value-added model requires a pretest score. Since SBAC test scores are recorded beginning in grade 3, grade 4 is the earliest grade eligible for analysis. Also, SBAC testing in both subjects only continues through grade 8, so high school grades could not be included in this analysis. More sophisticated modeling methods are possible for analysis of high school grades, but have not yet been validated for SBAC data.

There have been two other studies on the effectiveness of NBC teachers in L.A. Unified. In the first study, 99 elementary schools in L.A. Unified volunteered to participate. At each school, researchers paired a teacher who applied for National Board certification with a teacher in the same grade who had not applied. A randomization method switched about half of the students between the paired teachers, providing experimental validity to the study. The researchers then compared the end-of-year student test scores of the paired teachers.

This study found that the students of the NBC teachers did no better than did the students of the teachers who never applied for National Board certification. However, among the teachers who applied, those who received the certification had students who scored higher on average than the students of the teachers who failed to achieve certification. This finding indicates that the National Board certification process may be able to distinguish between more and less effective teachers.³ However, these results should be interpreted with caution for a few reasons. Since there were only 99 NBC teachers in the treatment group, and schools had to agree to participate, the NBC teachers in the study may not be representative of NBC teachers across the district. In addition, about fifteen percent of students in the study switched classrooms, which poses a threat to the validity of the findings. Lastly, it should be noted that the study was conducted during 2003 through 2005, when district demographics and enrollment patterns as well as testing instruments were different from what they are today.

Another study of NBC elementary teachers in L.A. Unified, using student test score data from 2006-07 to 2010-11, revealed that elementary students of NBC teachers significantly outperformed elementary students of other teachers in math and English language arts by 0.07 and 0.03 standard deviations, respectively.⁴ However, this study did not utilize random assignment, and consequently the findings are more questionable than the previous study. In addition, the study did not include a rich set of control variables as other observational studies generally do.⁵

To situate these local findings in the wider research literature, we compared the results from L.A. Unified to those from other states. Studies of NBC teachers in Florida yield conflicting results. Harris and Sass (2009) find little evidence that NBC teachers are significantly more effective than other teachers overall, with the exception of NBC high school math teachers, whose students show improvement. However, Chingos and Peterson (2011) estimate that students of

³ Cantrell, S., Fullerton, J., Kane, T. J., & Staiger, D. O. (2008). National board certification and teacher effectiveness: Evidence from a random assignment experiment (No. w14608). National Bureau of Economic Research.

⁴ Strategic Data Project. (2012). SDP Human Capital Diagnostic: Los Angeles Unified School District. Center for Education Policy Research, Harvard University.

⁵ Chingos, M. M., & Peterson, P. E. (2011). It's easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review*, 30(3), 449-465.

NBC teachers significantly outperform students of other teachers by 0.02 to 0.03 standard deviations, a very small effect. One possible explanation for the divergent conclusions is that the two studies used different methodologies, and the difference between finding no effect and finding a very small effect can be a result of modeling choices.

Studies of NBC teachers in North Carolina also arrive at mixed results. While Goldhaber and Anthony (2007) find that elementary school NBC teachers are more effective than other teachers in reading instruction, Sanders, Ashton, and Wright (2005) argue that there is no difference in effectiveness between NBC teachers and other teachers. Again, one explanation for the difference in results is model specification, since the two studies use very different statistical methods.

When comparing the effectiveness of two groups, it is important to keep in mind that a substantial number of NBC teachers—roughly 40% in one study—perform worse than the average non-NBC teacher, even if the average NBC teacher performs better than the average non-NBC teacher. To put it another way, there is greater variation in teacher effectiveness *within* each group than *between* groups.⁶ Individual measures of effectiveness are more likely to be successful than group characteristics at identifying high-performance teachers.

In sum, the nationwide evidence is mixed regarding the effectiveness of NBC teachers. Even studies that examine the same group of teachers do not arrive at the same conclusion. However, those studies tend to be several years old and based on a different type of student test than used today. *The analysis of recent data by the Independent Analysis Unit in L.A. Unified indicates that NBC teachers have a positive though small impact on the test score gains of their students.*

ARE NBC TEACHERS EQUITABLY DISTRIBUTED?

No, there is substantial evidence from L.A. Unified and other states showing that NBC teachers are not equitably distributed. NBC teachers in L.A. Unified are less likely to teach students in poverty and Black and Hispanic students, and more likely to teach White and Asian students. Tables 3 and 4 describe the types of students that comprise classrooms of NBC teachers and other teachers.

Table 3. Share of Students Living in Poverty by NBC status

	Not NBC	NBC	difference
Not Poverty	20.2%	26.0%	5.8%
Poverty	79.8%	74.0%	-5.8%

⁶ Goldhaber, D. (2006). National Board teachers are more effective, but are they in the classrooms where they're needed the most? *Education*, 1(3), 372-382.

Table 4. Racial/Ethnic Composition of Classrooms Taught by NBCTs and non-NBCTs

	Not NBC	NBC	difference
American Indian/Alaska Native	0.3%	0.4%	0.1%
Asian	4.3%	6.1%	1.8%
Black	7.6%	5.8%	-1.8%
Filipino	2.3%	2.7%	0.4%
Hispanic	74.8%	70.8%	-4.1%
Pacific Islander	0.4%	0.3%	-0.1%
Unknown	0.2%	0.1%	-0.1%
White	10.1%	13.9%	3.7%

Other studies on NBC teachers in L.A. Unified also arrive at similar conclusions. Specifically, NBC teachers are more likely to be located in higher-achieving schools. Within the same school, those who apply for National Board certification are typically assigned students who are academically stronger than those assigned to teachers who never apply for NBPTS certification.⁷

The imbalanced distribution of NBC teachers is not unique to L.A. Unified. Statewide studies of NBC teachers in Washington, North Carolina, and Florida reveal similar trends, with NBC teachers having lower shares of students who are eligible for free/reduced price lunch and lower shares of minority students. As an example, in Florida, the shares of students eligible for free and reduced lunch are 42% and 31% for NBC teachers and non-NBC teachers, respectively. NBC teachers also have higher-achieving students and lower shares of racial minorities.

NBC teachers are also inequitably distributed by prior student test scores. There is a greater likelihood that students entering the classroom at the beginning of the year will have a NBC teacher if they have higher test scores in the previous year. In English language arts for L.A. Unified, the size of this relationship was 0.31 standard deviations, or about 31 scale score points. In Math for L.A. Unified, the size of this relationship was 0.29 standard deviations, or about 28 scale score points. In other words, this is the already-existing difference between students assigned to National Board teachers and students assigned to non-NBC teachers, which is echoed in the wider research literature. The above points are summarized in the following table.

⁷ Cantrell, S., Fullerton, J., Kane, T. J., & Staiger, D. O. (2008). National board certification and teacher effectiveness: Evidence from a random assignment experiment (No. w14608). Cambridge, MA: National Bureau of Economic Research.

Table 5. The Association Between Student Test Scores and NBC status

	NBC association with students' prior year scores	NBC association with students' new year gains
ELA	0.31	0.11
Math	0.29	0.06

Note. Units are measured in standard deviations of a student score

These differences are greater than the difference in outcomes attributable to the NBC teacher. However, it is important to note that even though a higher scoring, higher SES student is more likely to be assigned to a National Board teacher, *those student characteristics are controlled for in the value added model used by the Independent Analysis Unit to measure effectiveness. In other words, a higher-scoring, higher SES student who is assigned to a National Board teacher achieves 6-11 scale score points higher on the SBAC tests, on average, than an equally higher-scoring, higher SES student who is not assigned to a National Board teacher.* The positive impact of the National Board teacher is real for the students assigned to them.

DOES THE PROCESS OF APPLYING FOR NATIONAL BOARD CERTIFICATION IMPROVE TEACHER QUALITY?

The evidence is mixed. According to studies using large, longitudinal datasets, there is little evidence suggesting that participation in the National Board certification process enhances teacher effectiveness.⁸ Studies using statewide data from Florida and North Carolina find that teachers who apply for National Board certification differ than those who do not, suggesting that, if there are differences in teacher quality between the two groups, it is not a result of the certification process.

On the other hand, studies relying on classroom observations and teacher interviews find that National Board candidates did change their teaching practices due to the NBPTS certification process. Specifically, the assessment-related activities associated with the NBPTS certification process were linked with improvement on teachers' classroom assessment practices.⁹

CONCLUSION

Although nationwide evidence is inconclusive regarding the effectiveness of NBC teachers, *there is valid evidence that small positive effects exist in L.A. Unified in the elementary and middle grade levels.* No studies to date have examined NBC high school teachers in L.A. Unified.

⁸ Harris, D. N., & Sass, T. R. (2009). The effects of NBPTS-certified teachers on student achievement. *Journal of policy analysis and management*, 28(1), 55-80.

⁹ Sato, M., Wei, R. C., & Darling-Hammond, L. (2008). Improving teachers' assessment practices through professional development: The case of National Board Certification. *American Educational Research Journal*, 45(3), 669-700.

Evidence indicates that the National Board certification process can distinguish between more and less effective teachers, with successful applicants outperforming unsuccessful applicants.¹⁰ However, there is little evidence that the actual certification process leads to improved teacher quality. Rather, those who choose to apply for National Board certification may already differ from those who do not (e.g., motivation, pedagogical content knowledge, teacher beliefs).

Besides the direct effects of National Board certification on student test scores, the process appears to lead to some unintended consequences. First, obtaining the National Board certification leads to greater employment mobility, particularly among teachers in high-minority schools who become able to move to higher-status schools. In districts and states where NBC teachers receive generous financial incentives for teaching in disadvantaged schools, the distribution of NBC teachers is more equitable.¹¹ To encourage NBCTs to teach in high-need areas, policymakers and district leaders could consider providing targeted financial incentives.

Second, NBPTS certification is a potential distraction from classroom obligations. During the application year, students of NBC teachers perform lower than students of teachers who do not apply for National Board certification, suggesting that the NBPTS-certification process may take time away from class preparation.¹² Thus, even if NBC teachers add value to students after becoming certified, the certification process itself represents a cost during the certification year. Policies to address this cost might include relieving teachers from outside-the-classroom duties during the certification year.

Third, it is important to remember that incentives may increase the number of teachers who take responsibility for their own professional growth by putting themselves through a lengthy process of self-development, reflection and assessment.

When considering whether to change incentives for National Board certification, it may be tempting to conclude that because the effects are small or the research inconsistent, that the National Board certification process is without value. This would be unjustified given the limitations of the studies to date. It is important to keep in mind that the inability to find an effect with a limited model and limited data does not mean the effect does not exist. In addition, the measures of teacher effectiveness used most studies may not capture all of the value that teachers add to the classroom. If we could create measures that fully and accurately capture the complexity of teacher practice, we might see more conclusive and positive associations between National Board certification and student outcomes.

¹⁰ Chingos, M. M., & Peterson, P. E. (2011). It's easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review*, 30(3), 449-465.

¹¹ Humphrey, Daniel C., Julia E. Koppich, and Heather J. Hough. 2005. Sharing the wealth: National board certified teachers and the students who need them most. *Educational Policy Analysis Archives* 13 (18): 1-48.

¹² Goldhaber, D., & Anthony, E. (2007). Can teacher quality be effectively assessed? National board certification as a signal of effective teaching. *The Review of Economics and Statistics*, 89(1), 134-150.