REVIEW OF *PAYING THE BEST TEACHERS MORE TO TEACH MORE STUDENTS*

Reviewed By

Patricia H. Hinchey
Penn State University

April 2015

Summary of Review

Critics of typical "single-salary" pay scales for teachers argue they under-compensate great teachers and over-compensate inept teachers. As a result, many pay-for-performance plans have been tried, with mixed results. This report proposes yet another variable compensation plan: paying the top quartile of teachers in a district a bonus for accepting up to three additional students into their existing classes. Without evidence, the report posits that having more students work with more effective teachers would offset any potential sacrifice in student learning. It projects significant district savings because larger classes would allow substantial reductions in faculty. The report does not address the well-documented problem of identifying high-performing teachers; it misrepresents the known effect of class size on student learning; and it ignores what is known about teacher pay, attitudes and job satisfaction. Projected outcomes are based on average class sizes, which obscure the potential impact on thousands of teachers and students in already overcrowded classrooms. Moreover, its proposed bonuses obscure the fact that teacher salaries overall are too low to recruit and retain sufficient numbers of talented faculty, especially in high-needs schools, and would likely remain so even under this more-work-for-more-pay model. Rather than a practical response to known issues with single-salary pay scales, the proposal seems primarily a scheme to reduce the teaching force. The report is superficial and misleading, and its proposal has no value as a nationwide model.

Kevin Welner
Project Director

William Mathis
Managing Director

Don Weitzman
Academic Editor

Erik Gunn
Managing Editor

National Education Policy Center

School of Education, University of Colorado
Boulder, CO 80309-0249
Telephone: (802) 383-0058

Email: NEPC@colorado.edu
http://nepc.colorado.edu

Publishing Director: Alex Molnar

REVIEW OF *PAYING THE BEST TEACHERS MORE TO TEACH MORE STUDENTS*

Patricia H. Hinchey, Penn State University

I. Introduction

Critics of typical "single-salary" pay scales for teachers—those typically based on education and experience—argue that too often great teachers receive far too little compensation while inept teachers receive far too much. In addition, there is much interest in the possibility of using differentiated "combat pay" to lure good teachers into schools serving the nation's poorest students, who are often taught by poorly qualified or unqualified (if well-intentioned) individuals. As a result, many pay-for-performance and merit pay plans have been tried in recent years—with mixed results that include multiple unintended outcomes, including inappropriate dismissals and anticipated lawsuits.[1]

A new report from the Edunomics Lab at Georgetown University offers yet another approach to variable teacher pay.[2] *Paying the Best Teachers More Money to Teach More Students*, authored by Marguerite Roza and Amanda Warco, argues that districts should pay the top quartile of teachers a bonus for increasing their existing class sizes by up to three students. Acknowledging that such additions might push class size past legal or contractual limits, the authors suggest that policymakers interested in the proposal may need to "clear some policy barriers" (p. 9). The report posits that any potential sacrifice in student learning would be offset by having more students work with more effective teachers. It further projects that districts would realize significant savings because larger classes would ultimately allow for substantial reductions in teaching staff. The authors do not speak to the question of whether, if teachers refused the bonuses, increased class sizes would become mandatory.

However, the report ignores the well-documented and crucial technical problem of how the best teachers might be reliably identified. In addition, it ignores a solid research base that has established a strong link between class size and student learning. And, it misrepresents what is known about teacher pay, teacher attitudes and teacher job satisfaction: even the proposed double-digit bonuses for a fraction of teachers typically would not produce salaries commensurate with those in other fields requiring similar education. Moreover, even bonuses in the $20,000 range have already proven unreliable in motivating teachers to accept poor work conditions,[3] and this plan would make a bad situation still worse for many teachers. In using average class size and salaries as a base

for projections, the report ignores the reality that many classrooms are already overcrowded. Under this plan, elementary classrooms now containing 32 children would increase to 35. On the whole, the plan is misleading because the averages used to project practical outcomes are not representative of diverse schools and districts across states.

II. Findings and Conclusions of the Report

The report concludes that paying the top quartile of a district's teachers a bonus for accepting up to three additional students into their classes would significantly increase their compensation while concurrently reducing the number of faculty needed to staff schools. It further projects that implementing the plan would result in substantial savings for districts because the salaries eliminated would potentially yield millions of dollars beyond the cost of the bonuses.

The report bases its findings primarily on a financial model based on 2012-2013 data from the Cypress-Fairbanks ISD, located in a rapidly growing suburb of Houston, Texas. The analysis finds that

> if the district had selectively added three extra students to all the classrooms of the top-quartile teachers in 2012-13, it could have hired 185 fewer teachers overall, at a total savings of over $11 million in salary and benefits (p. 4).

Based on the analysis, the report also calculates that the bonuses awarded to teachers accepting three additional students would have ranged from $8,009-$8,359 per teacher, "a raise of between 16 percent and 17 percent of base salary" (p. 4).

The report also projects potential teacher bonuses for each state based on average class sizes and salaries; the projected pay increases range from 16%-26%, with 19% being the national average.

III. The Report's Rationale for Its Findings and Conclusions

The report's plan depends upon several conditions or assumptions:

- A reliable method exists for identifying the "top quartile" of teachers.

- Class size has a negligible effect on student learning.

- Teachers are likely to support a plan that calls for accepting more students in return for higher pay.

IV. The Report's Use of Research Literature

The assumptions underpinning the report's rationale ignore or misrepresent related research.

The most effective teachers can be reliably identified.

The report does not include a definition of its key term "effective teachers," nor does it address the critical question of how those teachers are to be identified. However, in recent years the term "effective teachers" has been widely defined as "those whose students show substantive increases in standardized test scores," it seems likely that the report assumes this definition. Given the report's use of the term "top quartile" and given the extent to which the Race to the Top federal grant program has driven states to impose Value-Added Models (VAM) requirements on districts, it appears that the proposed plan implicitly assumes that VAM assessments would be used to identify the "top quartile" teachers targeted for larger classes.[4]

However, there is copious research literature demonstrating that value-added modeling is unreliable, with the same formula moving the same teachers from band to band in succeeding years.[5] For example, some teachers have placed in the top quartile one year only to drop to the lowest the next.[6] Reviewing existing research, a report from the Economic Policy Institute found that "the research community has cautioned against the heavy reliance on test scores, even when sophisticated VAM methods are used, for high stakes decisions such as pay, evaluation, or tenure" (p. 2). Even one report that the authors cite[7] offers this warning in relation to using VAM for decisions related to teacher pay:

> **More basic research is needed on the data and methodological requirements for using student achievement tests as a gauge of teacher effectiveness.** Research has clearly demonstrated that it is no simple task to isolate teachers' contributions toward student achievement or to know how much student and teacher data is necessary in order to make strong inferences about the differences in performance between teachers. Mistakes about teacher performance carry particularly high stakes when performance is linked to teacher pay, and any such errors would seriously undermine political support for compensation reforms—and could even lead to legal action [Emphasis in original].[8]

Relying on this source to support a minor point while ignoring its strong caution *not* to use VAM for calculations related to teacher pay suggests that the *Paying* report employed research findings selectively to make its case.

Lacking a means of reliably identifying the best 25% of teachers in a district, there is no evident way to be sure that the most competent teachers would be working with the students moved into larger classes.

A related point rarely recognized by VAM advocates is that there is no assurance that the very best teachers in a school comprise precisely 25% of its teaching force. In one school, 90% of all teachers might be highly competent and divided into quartiles based on meager

statistical differences, while in another school 90% of all teachers might be mediocre, so that the top quartile would contain 15% of inept teachers similarly assigned based on minor statistical differences. The "top quartile" is a mathematical construct rather than a meaningful indicator of the relative quality and ability of an actual sample of teachers. In a school with a dearth of teaching talent, which is too often the case in highest-need schools, students might be moved into a class taught by a teacher who placed in the top quartile but who nonetheless lacks exceptional skill—the skill the *Paying* plan assumes will compensate for the disadvantage of larger class size.

The report does briefly mention teacher evaluation as a potential issue (p. 3), but acknowledges only this as a resulting complication: "Districts that don't already have systems to quantifiably measure teacher effectiveness would need to develop them" (p. 9). The report's single concern about teacher assessment appears to be whether it is quantifiable.

However, with no *reliable* way to identify the "most effective" teachers, the proposed plan is untenable.

Class size has a negligible effect on student learning—and good teachers can offset any potential losses.

The report asserts that there is "a weak relationship between smaller class sizes and improved academic performance" and that "gains from smaller class sizes are dwarfed by gains from being taught by a more effective teacher" (p. 2). First, as noted above, there is no way to ensure that the teachers ranked as "more effective" will be especially talented teachers capable of making up any student learning sacrificed to class size. And second, the projections suggesting that great teachers can make up lost learning time are themselves products of VAM calculations and are therefore also highly suspect.

> *There is no evidence to support the claim that any sacrifice in student learning could—or would—be made up by staffing the larger classes with the most talented teachers.*

Most importantly, however, the relationship between class size and student learning is not weak, but well-documented.[9] Smaller classes have a demonstrated positive effect on learning. Moreover, gains in achievement in smaller classes have been linked to teacher attention, which splinters as class size grows:

> At primary and secondary levels smaller classes led to pupils receiving more individual attention from teachers, and having more active interactions with them. Classroom engagement decreased in larger classes, but, contrary to expectation, this was particularly marked for lower attaining pupils at secondary level. Low attaining pupils can therefore benefit from smaller classes at secondary level in terms of more individual attention and facilitating engagement in learning.[10]

Because the amount of teacher attention available in a single class is a fixed resource, additional students in a class unavoidably reduce the amount of attention available to individual students. There is no assurance that this loss either could or would be compensated for by highly competent teachers. Therefore, the cost of this plan includes the potential for significant losses in student learning.

The projected double-digit bonuses are high enough to persuade teachers to accept increased class size.

In discussing potential benefits of the plan, the report notes that projected bonuses are larger than many reported in the past (p. 8) and says there is evidence teachers would be willing to trade off class size for high enough bonuses:

> Some research suggests . . . that teachers value higher pay over smaller class sizes when the size of the bonus is high enough. In one survey, 83 percent of teachers responded that they would prefer an extra $5,000 in salary to teaching two fewer students. (p. 2)

I could not find that statistic in the article cited[11]; what I did find, however, is another case of the *Paying* report's selective use of research. The authors of the cited article—experts on teacher compensation—did make this point, however: "Teacher compensation reforms can founder . . . when policymakers pay little attention to teachers' acceptance of the reform".[12] They also issued this caution about making broad generalizations about teacher attitudes:

> It makes little sense to refer to teachers in the abstract. Teacher opinions may vary by both individual and workplace characteristics [and] attempts to gauge teacher opinion can tell policymakers only so much.[13]

That is, a high school social studies teacher working in a wealthy suburban school teaching classes of 20 is likely to have a different attitude about adding two or three students to her class than a high school math teacher in an under-resourced urban school teaching classes of 40. This means that even if 83% of some surveyed group of teachers did report the attitude above, the finding is meaningless without any information on exactly which teachers, in which job circumstances, expressed this preference. It is also possible that the wording of the question—which refers not to *in*creasing current class size but to *de*creasing it—affected teacher response.

In addition, teachers are already leaving the profession because of dissatisfaction with job conditions, and larger class sizes might worsen the problem. For example, in one survey addressing the question of why beginning teachers leave their positions so frequently, nearly two-thirds reported wanting to pursue another job or being dissatisfied with their current job. While three-fourths of these teachers did link their leaving to low salaries, an even higher percentage reported that working conditions in their schools also motivated their decision.[14] Larger class sizes are likely to exacerbate existing complaints about work conditions—especially in schools that already have large class sizes. The proposed double-

digit bonuses may appear generous, but teachers have turned down bonuses as high as $18,000-$20,000 to work in schools where working conditions were especially poor. [15]

There is, in short, much reason to question whether teachers will readily embrace the proposal as predicted.

V. Review of the Report's Methods

The *Paying* report appropriately notes that its plan would work best in growing school districts and is likely not feasible for very small districts or for schools with very high teacher turnover. However, the plan is also likely to be unsuitable for many other districts because the data used for projections—while real—are averages that misrepresent conditions in many American schools and districts.

The financial model presented in the report is based on the rapidly growing suburban Cypress Fairbanks ISD in Texas, where average elementary class size is reported as 21.6 (p. 4). However, that average does not reflect the experience of, say, many elementary teachers in New York City's borough of Manhattan, where the 2014-15 class size for first grade ranged as high as 32, with classes of 25 and above not uncommon.[16] How palatable an increase in class size might be to a particular teacher will depend not only on the size of the bonus but also upon existing class sizes—and many are already significantly higher than the Cypress Fairbanks averages.

The projections for state bonuses and potential class sizes are also based on averages and so are also unrepresentative. Interestingly, for example, the average reported for New York state's elementary schools is 21.5—slightly lower than the model district's. Yet, as noted above, elementary classes in Manhattan are commonly already much higher. The averages which underpin all projections in the *Paying* report are essentially meaningless for designing school policy. As a simple illustration: if one district had four first grade classes with 30 students, three with 25 students, and three with 15 students, the average class size would be 24. That average, however, would obscure the fact that 40% of all classes already had 30 students. The report's proposal to add up to three students to a class appears more palatable when linked to New York's 2011-12 average elementary class of 21.5 rather than to Manhattan's common class sizes of 25-32. Using averages distorts what would actually happen in many existing classrooms.

Similarly, reporting salary increases in terms of percentages is a standard practice that allows employers to appear generous when base salaries are low. The promise of double-digit pay increases helps obscure the fact that base salaries for teachers are widely recognized as inadequate, given the intense demands of the teaching profession. In fact, another case of selective use of research is evident when the authors ignore this point in an article they cite on reforming teaching pay:

> School districts can't escape labor market realities. . . . Ten years out of college, the gap between teachers and non-teachers who have a technical major is $27,890; the gap is $18,904 for those who hold a non-technical degree.[17]

While the 15% bonus projected for Arizona would add an extra $7,312 to the average salary of $47,553, for example, the resulting total compensation would still amount to only $54, 865—below even the report's U.S. average of $55, 489 (p. 7). Double-digit bonuses for 25% of teachers will not significantly impact inadequate compensation for the profession. Instead, meager bonuses for some teachers will come at the expense of their time and energy, while children will receive still less teacher attention in increasingly crowded classrooms. The clear winners will be districts that save money by reducing professional staff.

The report's reliance on gross averages for its projections distorts the proposal's potential impact—especially on students and teachers—within and across schools, districts, and states.

VI. Review of the Validity of the Findings and Conclusions

Based on data from one school district and on state averages, the report's calculations are an inadequate foundation for adoption of the plan. Class size averages obscure the fact that many classrooms in the nation's schools are already overcrowded and poor conditions would be worsened by the addition of even a single student. Moreover, adding dollars to the paychecks of 25% of the existing teaching force in return for their accepting more work does nothing substantive to increase their typically inadequate salaries—or those of the other teachers who soldier on without the bonus. Even worse, there is no evidence to support the claim that any sacrifice in student learning could—or would—be made up by staffing the larger classes with the most talented teachers. Instead, those classes could easily be staffed by the least talented teachers in a school, since there are no valid means of determining which teachers are best—even if one accepts the definition of an "effective teacher" as one who increases test scores, which many educators do not.

VII. Usefulness of the Report for Guidance of Policy and Practice

The report's plan is unsupported by either original research or existing research literature. Based only on speculation, it offers no useful strategy for policymakers. Its assumptions are unsubstantiated, its use of averages to calculate projections is misleading, and it ignores copious research on both the importance of class size and on the unreliability of value-added models (VAM).

Rather than a useful guide for policy, the plan appears to be a rationale for reducing the teaching workforce—and thus the cost of education.

Teacher compensation is a critical issue. Finding better strategies to pay teachers fairly and adequately for their work will require far more rigorous and nuanced thinking and research than that reflected in this report.

Notes and References

1   For typical outcomes, see: Amrein-Beardsley, A. & Collins, C. (2012). The SAS education value-added assessment system (SAS® EVAAS®) in the Houston Independent School District (HISD): Intended and unintended consequences. *Education Policy Analysis Archives (20)*12. Retrieved March 20, 2015, from http://epaa.asu.edu/ojs/article/view/1096/982

2   Roza, M. & Warco, A. *Paying the best teachers more to teach more students.* Washington, DC: Edunomics Lab at Georgetown University. Retrieved March 19, 2015, from http://edunomicslab.org/wp-content/uploads/2015/02/PayBestTeachersMore_FINAL.pdf

3   Darling Hammond, L. (2010). Recruiting and retaining teachers: Turning around the race to the bottom in high-need schools. *Journal of Curriculum and Instruction (4)*1, 16-32. Retrieved March 25, 2015, from http://www.joci.ecu.edu/index.php/JoCI/article/viewFile/42/74

     Kopkowski, C. (2008). Why they leave. Retrieved March 24, 2015, from http://www.nea.org/home/12630.htm

4   A footnote on page 9 referencing the influence of Race to the Top also suggests a reliance on VAM.

5   For a scattergram that graphically illustrates the vagaries of VAM results, see: Baker, B. (2012, Nov. 17). School Finance 101: On the stability (or not) of being irreplaceable [Blog post]. Retrieved March 21, 2015, from https://schoolfinance101.wordpress.com/2012/11/17/on-the-stability-or-not-of-being-irreplaceable/

6   Baker, E. L., Barton, P. E., Darling-Hammond, L., Haertel, E., Ladd, H. F., Linn, R. L., & Shepard, L. A. (2010). *Problems with the use of student test scores to evaluate teachers.* EPI briefing paper #278. Washington, D.C.: Economic Policy Institute. Retrieved March 21, 2015, from http://www.epi.org/publication/bp278/

7   On page 8 of the *Paying* report, the authors cite a Goldhaber article (see next endnote) to support their contention that double-digit bonuses are unusually generous.

8   Goldhaber, D. (2009). *Teacher pay reforms: The political implications of recent research.* Washington, D.C.: Center for American Progress, 3. Downloaded March 21, 2015, from https://www.americanprogress.org/issues/education/report/2006/12/11/2387/teacher-pay-reforms/

9   Schanzenbach, D.W. (2014). *Does class size matter?* Boulder, CO: National Education Policy Center. Retrieved March 21, 2015, from http://nepc.colorado.edu/publication/does-class-size-matter

10   Blatchford, P., Bassett, P. & Brown, P. (2011). Examining the effect of class size on classroom engagement and teacher-pupil interaction: Differences in relation to pupil prior attainment and primary vs. secondary schools. *Learning and Instruction (21)*, 715-730; 715.

11   Goldhaber, D., DeAmond, M. & Deburgomaster, S. (2011). Teacher attitudes about compensation reform: Implications for reform implementation. *Industrial and Labor Relations Review*, *(64)*3:441-463. Retrieved March 21, 2015, from JSTOR (subscription required).

12   Goldhaber, D., DeAmond, M. & Deburgomaster, S. (2011). Teacher attitudes about compensation reform: Implications for reform implementation. *Industrial and Labor Relations Review*, *(64)*3, 441-463; 442. Retrieved March 21, 2015, from JSTOR (subscription required).

13   Goldhaber, D., DeAmond, M. & Deburgomaster, S. (2011). Teacher attitudes about compensation reform: Implications for reform implementation. *Industrial and Labor Relations Review*, *(64)*3:441-463; 445. Retrieved March 21, 2015, from JSTOR (subscription required).

14   Ingersoll, R. M. & Smith, Thomas M. (2003). The wrong solution to the teacher shortage. *Educational Leadership, (60)*3, 30-33. Retrieved March 15, 2015 from
http://www.gse.upenn.edu/pdf/rmi/EL_TheWrongSolution_to_theTeacherShortage.pdf

15   Darling Hammond, L. (2010). Recruiting and retaining teachers: Turning around the race to the bottom in high-need schools. *Journal of Curriculum and Instruction (4)*1, 16-32. Retrieved March 25, 2015, from
http://www.joci.ecu.edu/index.php/JoCI/article/viewFile/42/74

Kopkowski, C. (2008). *Why they leave.* Retrieved March 24, 2015, from
http://www.nea.org/home/12630.htm

16   New York City Department of Education (2015, February 13).District Level Distribution Summary. New York: Author. Retrieved March 21, 2015, from http://schools.nyc.gov/AboutUs/schools/data/classsize/classsize.htm

17   Goldhaber, D. (2009) *Teacher pay reforms: The political implications of recent research*. Washington, D.C.: Center for American Progress, 7. Retrieved March 21, 2015, from
https://www.americanprogress.org/issues/education/report/2006/12/11/2387/teacher-pay-reforms/