

ISSUE PAPER

STUDENT PERFORMANCE ASSESSMENT IN DIVERSIFIED TEACHER COMPENSATION SYSTEMS

Education Commission of the States

The Joyce Foundation

by Jeanne Kaufmann

The third paper in a series of four

Introduction to the Project

Changing the

way teachers are paid to in-

clude outcomes, such as student performance, or incentives for teaching in at-risk schools is gaining support in districts and states across the country. The policy process for moving away from the traditional compensation structure is a complex one, however. As is true in all sound policymaking, those designing and seeking to implement diversified teacher pay systems would benefit from reviewing what has been learned by both the research and policymaking communities in order to design programs with a better chance at succeeding. With the generous support of the Joyce Foundation, the Education Commission of the States has created a series of resources to provide policymakers and leaders with information on redesigned compensation systems. The resources include:

- ★ An issue site on the ECS Web site with current resources
- ★ A redesigned teacher compensation database with information on state-, district- and local-level redesigned compensation programs
- ★ A series of four issue papers:
 - Funding Issues in Diversified Teacher Compensation Systems
 - Teacher Evaluation in Diversified Teacher Compensation Systems
 - Student Performance Assessment in Diversified Teacher Compensation Systems
 - The Use of Diversified Compensation Systems to Address Equitable Teacher Distribution.



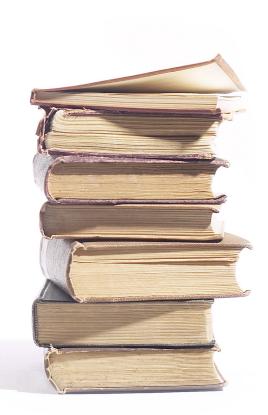
We hope these resources are of value and relevance to policymakers and practitioners who are considering redesigning teacher compensation systems in their states, districts and schools.

TABLE OF CONTENTS

Note: all URLs in this paper are live links.

INTRODUCTION TO DIVERSIFIED TEACHER COMPENSATION	3
STUDENT PERFORMANCE ASSESSMENT	4
Testing and Standardized Tests	4
Student Growth or Value-Added Methodology (VAM)	5
Learning Objectives	6
EXAMPLES OF CURRENT STATE, LOCAL AND DISTRICT ASSESSMENT METHODS.	6
TRACKING DATA	8
DISCUSSION	9
Questions to consider when attempting to gauge or measure student achievement gains via tests:	10
REFERENCES	11
ENDNOTES	13

© 2007 by the Education Commission of the States (ECS). All rights reserved. The Education Commission of the States is a nationwide, nonprofit organization that helps state leaders shape education policy. ECS is pleased to have other organizations or individuals share its materials with their constituents. To request permission to excerpt part of this publication, either in print or electronically, please e-mail ecs@ecs.org. Document No. TQ-07-03.



INTRODUCTION TO DIVERSIFIED TEACHER COMPENSATION

Teacher quality is one of the greatest determinants of student achievement. It follows, therefore, that ensuring all students are taught by quality teachers is a priority, one that has been the subject of increasing focus with the passage of the No Child Left Behind Act in 2001 and its emphasis on establishing a minimum standard for highly qualified teachers and accountability for student performance. One of the ways in which policymakers are attempting to improve teacher quality and ensure all students are taught by a high-quality teacher is through changes in the system by which teachers are compensated.

Attempts to move teacher compensation systems away from the single salary schedule in which teachers are compensated based on years of service and educational attainment to one more reflective of teacher performance are not new. Earlier attempts at diversification fell into two basic categories: experimental merit pay and career-ladder systems; neither enjoyed uniform success.¹

Experimental merit pay systems were limited in several ways. First, they tended to rely solely on subjective evaluation of the teacher by a school administrator as the means of determining bonus distribution. Additionally, these were zero-sum systems, meaning the number and amount of

bonuses were limited by the lump sum given to a school for this purpose. These limitations contributed to the claim these systems created competition among teachers. Moreover, these programs showed no evidence they improved overall teacher quality or student success.²

Career-ladder systems were also tried as an attempt to eliminate the flat career structure of the teaching profession. These systems provided additional salary and advancement opportunities for teachers who assumed additional roles such as mentoring and administrative responsibilities. While these programs showed promise through some improvement in student achievement, many programs were not able to obtain sustainable funding. However, certain aspects of career-ladder systems exist today within diversified teacher compensation programs. For a more complete discussion of teacher compensation reform efforts please see the ECS issue paper, *Diversifying Teacher Compensation* available at: http://www.ecs.org/clearinghouse/65/83/6583.pdf.

Modern reform attempts are more sophisticated in their design and tend to include multiple methods of evaluation, rewards for taking on leadership roles and links to outcome-based assessment such as student performance. Many programs also reflect the goals of the schools, districts and states by offering focused incentives to address high-need or challenging areas. Further, it is important to note that these programs are likely to be most effective as part of a larger system of teacher support.

This is the third in a series of four issue papers that highlight and discuss various aspects of diversified teacher compensation systems.

The four papers in the series are:

- Funding Diversified Teacher Compensation Systems (http://www.ecs.org/clearinghouse/74/75/7475.pdf)
- Teacher Evaluation in Diversified Teacher Compensation Systems (http://www.ecs.org/clearinghouse/74/78/7478.pdf)
- Student Performance Assessment in Diversified Teacher Compensation Systems (http://www.ecs.org/clearinghouse/74/76/7476.pdf)
- The Use of Diversified Compensation Systems to Address Equitable Teacher Distribution (http://www.ecs.org/clearinghouse/74/77/7477.pdf)

These issue papers were created with the generous support of the Joyce Foundation as part of a larger project on redesigned teacher compensation systems. Other resources produced through this project include an issue site on teacher compensation (available through the ECS Education Issues site) and a database containing information on state-, district- and local-level diversified compensation systems (available at: http://www.ecs.org/html/t_comp.htm).

STUDENT PERFORMANCE ASSESSMENT

Raising student achievement and performance levels is essential if the United States is to produce a workforce capable of competing in the global economy. This priority is reflected in offering teachers diversified compensation systems that may use student performance as one method to identify and reward effective teachers. Debates exist, however, as to the extent to which teachers should be evaluated using student achievement, or whether student achievement should be used in teacher evaluation at all. These debates tend to center around questions of how much a student's

academic performance is influenced by the teacher versus factors beyond the teacher's control, thereby making it inappropriate to hold a teacher accountable for student achievement.

Acknowledging this concern, diversified compensation systems that have successfully implemented teacher evaluation systems use multiple types of evaluation methods, including not only student achievement and performance but also non-student related factors such as pedagogical skills assessed through inclass observation, and rating of a teacher's skill based on standards or rubrics. For a review of teacher evaluation methods see the second issue paper in this series, *Teacher* Evaluation in Diversified Compensation Systems.

This issue paper reviews the types of student performance assessments currently in use in select diversified compensa-

tion systems; issues involved with each method, including the importance of data systems; and questions or considerations for policymakers and practitioners who are thinking about designing these types of systems.

"Should...teachers be compensated according to their longevity and highest degree attained, or by market value of their subject specialty? Or should they be compensated based

on how well their students perform on

standardized assessments?

Figuring out the best way to compensate K-12 teachers has occupied the best minds in education research for a long time. The system of paying teachers simply according to how long they've been on the job does not account for how effective they are, that is to say, how well their students achieve."

Teacher Compensation Remains a Challenge,
Tony Milanowski and Allan Odden, Wisconsin
Center for Education Research, November 2006.

STUDENT ACHIEVEMENT EVALUATION AND ASSESSMENT METHODS

It is difficult to measure increases in student achievement. The three methods primarily used include:

- Testing and standardized tests used to compare students to each other in the same class, school, district and/or statewide
- Student growth models or value-added methodology – used to determine an individual student's growth, above or below average work and their potential over time
 - Learning objectives used to determine student growth based on outcomes and objectives determined by the teacher often in conjunction with the principal or other school administrator.

Some state and district programs utilize one or more of these methods to evaluate student achievement. For a more complete overview of state, local and district programs that use increased student achievement as a determining factor in teacher incentive programs refer to ECS' Redesigned Teacher Compensation Database at: http://www.ecs.org/html/t-comp.htm.

Testing and Standardized Tests

Standardized tests are traditionally used to assess student achievement. These tests are termed "standardized" because the format of the test, response options, length of testing time and other conditions of the test are specified and held constant for each testing situation. Standardized tests are usually given in multiple choice format with one correct answer for each question. Advantages to standardized tests include the relative ease of administra-

tion and scoring, however critics claim these tests are culturally biased causing minorities to fare less well than middle-class white students.³ Critics also claim that standardized tests gauge rote learning rather than critical thinking skills and are not reliable indicators of a student's ability.

Another criticism is that reliance on standardized tests may lead a teacher to concentrate on what the students will be tested on rather than other topics of importance, or "teaching to the test." According to Barnett Berry and Ed Fuller of the Center for Teaching Quality, standardized tests capture whether students have mastered the basics, memorized facts or applied formulas, however they do not determine whether students have developed higher order thinking skills or advanced reasoning.⁴ These are items education critics say are sorely lacking in school systems today.

The argument that a student's academic achievement is influenced by factors beyond a teacher's control and, therefore, should not be used for teacher evaluation, is strongest in systems using standardized tests. A method of student performance assessment that attempts to control for external factors is student growth or value-added methodology.

Student Growth or Value-Added Methodology (VAM)

Growth models are statistical models whereby a student's performance is predicted, assessed at the end of the year and over a period of years, and evaluated based upon that prediction. The best known method for this is the value-added method. According to Barbara Stewart, "Value-added modeling is a method of measuring student academic progress over time. It uses the annual standardized test scores for individual children, administered at the beginning and the end of the school year, to plot their progress in fundamental academic skills, and applies the results as a measure of the effectiveness of teachers and schools."

Value-added methods can show when a lower-scoring student is doing better than expected and when a higher performing student is not learning up to his or her potential. Well developed value-added methodology systems can measure how individual teachers influence learning for each child and use multiple years of student achievement data to estimate the effects of schools or teachers. Students are tracked as individuals and serve as their own controls.⁶

According to Dale Ballou, the advantage to value-added assessment is that it is based on students' progress and not on their level of achievement.⁷ Teachers are held accountable for gains made in student achievement and are not penalized for students who start out below average, nor are they acknowledged for those students who enter performing at a high level.

Value-added is a concept where teachers are evaluated on the basis of how much academic growth their students experience or exhibit over the course of a school year.⁸ Valueadded assessment also "controls for the influence of family income, ethnicity, and other circumstances on students' initial level of achievement," which is a primary criticism of the use of standardized tests.⁹

"[T]here are at least two reasons why VAM has attracted growing interest. One reason is that VAM holds out the promise of separating the effects of teachers and schools from the powerful effects of such noneducational factors as family background, and this isolation of the effects of teachers and schools is critical for accountability systems to work as intended. The second is that early VAM studies purport to show very large differences in effectiveness among teachers. If these differences can be substantiated and causally linked to specific characteristics of teachers, the potential for improvement of education could be great."

Evaluating Value-Added Models for Teacher
Accountability, McCaffrey, Lockwood, Koretz and
Hamilton, RAND Education, 2003.

On the other hand, value-added methodology has some critics. There have been few studies conducted and very little applicable discussion on its effectiveness due to the fairly recent implementation of this type of assessment. Barbara Stewart states that critics of value-added methodology do not believe high test scores equate with good teachers and low test scores equate with bad teachers. It has been cited that there may be errors in the computation of test scores or not enough data over a long enough period of time to compute those scores accurately, resulting, therefore, in unreliable data. Determine the state of student achievement or ability whether the value-added methodology is applied or not.

Learning Objectives

Learning objectives base student growth on outcomes or objectives. Quality learning objectives should identify a learning outcome, be consistent with course goals and be precise. Student growth results help teachers examine the impact of their instruction and can be used to modify classroom instruction. The three major components of learning objectives are:

- A description of what the student will be able to do
- The conditions under which the student will perform the task
- The criteria for evaluating student performance.¹²

Generally, learning objectives are competency-based and designate exactly what students need to do to demonstrate mastery of course material. Learning objectives are stated in terms of student outcomes and are used for the purpose of providing a framework for evaluating student understanding and progress, and as a basis for accountability.¹³

Sample learning objectives are below.¹⁴

EXAMPLES OF CURRENT STATE, LOCAL AND DISTRICT ASSESSMENT METHODS

State policies regarding teacher compensation and pay-for-performance programs do not dictate to districts or schools what methods should be used to determine increases in student achievement or gains in student growth. Teacher incentive programs, in general, have a student achievement component that relies on standardized assessments or tests, value-added methods and/or learning objectives to measure these increases in student achievement or growth.

For an overview of various state-, local- and district-level teacher incentive programs based on student achievement, refer to the ECS Redesigned Teacher Compensation Database at: http://www.ecs.org/html/t-comp.htm.

Sample Objectives — Reading		
Early Childhood Education	• 95% of students will write their first and last name and identify every letter i their name by the end of the year.	
	• 75% of students will identify at least 35 letters by the end of the year.	
Grade 5	85% of students will make a gain of at least one Qualitative Reading Inventory (QRI) level by the end of the year.	
Sample Objectives	— Mathematics	
Kindergarten	 85% of students will show a gain of at least one proficiency level on the Everyday Mathematics end-of-year assessment. 	
	 85% of students will gain at least 20 points (half-day kindergarten) or 25 points (full-day kindergarten) on the Everyday Mathematics end-of-year assessment. 	
Grade 4	 85% of students will show a gain of at least one proficiency level on the Everyday Mathematics end-of-year assessment. 	
	• 85% of students will gain at least 25 points on the Everyday Mathematics end-of-year assessment.	

The Florida STAR (Special Teachers Are Rewarded) program was changed to the Merit Award Program by legislation in March 2007 and is an example of a program that utilizes standardized tests, among other assessments It requires that all instructional personnel, administrators and supervisory staff be assessed for the purpose of improving the quality of services in the schools. These assessment procedures must be primarily based on the performance of students assigned to their classrooms or schools. The Florida Comprehensive Assessment Test (FCAT) is part of the statewide assessment program used to measure reading, writing, science and mathematics and the student test results are one of the tools used to evaluate instructional personnel. According to Florida statute, the testing program includes a combination of norm-referenced and criterion-referenced tests and includes questions that require the student to produce information or perform tasks in such a way that the skills and competencies s/he uses can be measured.¹⁵ Personnel evaluations are not limited to these types of assessments in determining increased student achievement.

For more information on the Florida Merit Award Program visit the Florida Merit Award Program Web site at: http://www.fldoe.org/PerformancePay/.

The **Q** Comp program in Minnesota is a state level performance pay program. Participation in Q Comp is not required by the state. Districts choose to apply to participate in Q Comp and must design a program that meets the parameters outlined by the state. One requirement is that the proposed program must include at least one value-added model as a component in assessing student achievement. The commissioner of education developed and implemented a system for measuring and reporting academic achievement and individual student progress that is consistent with the statewide educational accountability and reporting system. The components of the system measure the adequate yearly progress of schools and individual students (current achievement and progress over time). The commissioner must identify effective models for measuring individual student progress that enable a school district or school site to perform gains-based analysis, and at least one model must be a value-added assessment model.

For more information on the *Minnesota Q Comp* programs visit the Minnesota Department of Education Q Comp site at: http://children.state.mn.us/mde/Teacher_Support/QComp/Program_Components/index.html.

A local level program that uses **standardized tests** and **value-added methodology** is the **Benwood Initiative** in **Tennessee**, which targets nine low performing schools in Hamilton County. The program uses the Tennessee Value Added Assessment System (TVAAS) scores to measure how much progress students have made in a given year. It is recommended that standardized tests be supplemented by student assessments that are given at regular intervals throughout the school year and administered by teachers to each student. Examples of such assessments include:

- Dynamic Indicators of Basic Early Literacy Skills (DIBELS)
- Running Records
- ThinkLink
- TCAP Coach.

There are three forms of bonuses based on TVAAS, including a retention bonus, a recruitment bonus and a team bonus.

For more information on Tennessee's *Benwood Initiative* visit the Web site at: http://www.hcde.org/hr/benwood.htm.

Denver ProComp is an example of a district program that uses learning objectives. The learning objectives are set by the teacher in collaboration with the principal and use preand post-test measurements to assess learning or student growth. Teachers can develop their own assessment or use existing measures. Guidelines for student growth objectives are designed to address individual goals and are flexible enough to allow teachers to adjust their objectives for the students they serve, such as special education and English as a Second Language (ESL) students. Under ProComp teachers set two annual objectives. Teacher awards are based on the number of objectives reached by the student – teachers who meet one or two of their objectives will receive a salary increase or bonus; teachers who do not meet either objective will receive no increase.

For more information on *Denver ProComp* visit the Web site at: http://denverprocomp.org/.

In addition to these state-, local- and district-level programs, **Georgia**, **Alaska**, **Mississippi**, Aldine Independent School District in **Texas**, and public schools in **Washington D.C.**, are implementing teacher incentive programs that include a student achievement component. These programs are starting in the 2006-07 school year and there is currently no data available on how effective they are in recruiting and retaining teachers.

TRACKING DATA

In order to effectively and efficiently connect student test scores and other quantitative measures to evaluation of a teacher's performance, adequate and appropriate data systems need to be in place. Implementing database systems statewide allows school districts to link student data on assessments (test scores), movement in schools across the state (mobility) and graduation rates (attrition/retention). Databases would ultimately help in tracking individual students and academic achievement, thereby affording states the ability to comply with NCLB requirements and to view student progress over time.¹⁶

Creating a useful data system whereby student achievement information can be tracked and linked to a specific teacher, school or district requires participation of state agencies and school districts. The state can provide student assessment information and the district can match teachers to students. In these types of systems, the accuracy of the data is critical. Ensuring accuracy requires delegating adequate resources and putting into place a simple, streamlined system that is easy to utilize. Privacy issues are also at issue and every effort must be made to ensure the security of the data. Additionally, quality data systems used to match student achievement information to individual teachers must be able to contend with school and education-related circumstances such as team teaching, teachers who resign or start mid-year, and students who leave or start mid-year.17

The creation and maintenance of the types of comprehensive data systems effective in tracking teacher and student performance requires a commitment and investment of resources. Unfortunately, the importance of this type of investment is often overlooked or misunderstood by those with the ability to make those decisions and implement these systems. If a universal, state and/or national database was created and implemented, it would be easy to track students' movements, view and analyze data, and make projections and comparisons district- and statewide, as well as nationally. This is a costly and time consuming proposition, however, and may not be feasible given the capabilities and financial restrictions of various districts and states.

The advantages of comprehensive student data systems include:

- Consistent data definitions allowing for analysis of issues across databases, districts and potentially state lines
- Consolidation of data eliminating redundancy in data collection across state, district and local databases
- Flexibility to meet changing federal and state requirements
- Improved evaluation of programs and better data quality.¹⁸

Regardless of whether data systems are linked nationally, No Child Left Behind requires that all states disaggregate data (separate, compare and report) information according to various categories including:

- Racial and ethnic groups
- Socioeconomic status
- English Language Learners (ELL)
- Students with disabilities
- Gender
- Migrant status.19

By disaggregating data reviewers are able to:

- View achievement patterns of different groups of students
- Identify achievement gaps between different groups of students
- Identify schools that are raising student achievement and those that are performing below standard compared to schools with similar groups of students.²⁰

For more information on data systems refer to:Education Commission of the States' *No Child Left Behind Policy Brief on State Information Systems* at:

http://www.ecs.org/clearinghouse/34/61/3461.pdf.

For a progress report highlighting states' successes on building longitudinal data systems refer to: Data Quality Campaign, *Using Data to Improve Student Achievement* at: http://www.dataqualitycampaign.org/.

"To be effective, pay systems must be designed carefully, with attention to the assessment instruments used to measure performance improvements, the level of the goals established, and the support teachers have to modify instructional strategies in order to achieve program goals. When teachers are put under tremendous pressure to improve, without the resources needed to make the improvements, school-based performance award programs can destroy morale and warp educational objectives.

"Teachers need to understand the goals, see them as achievable, feel supported in improvement efforts, and trust that the system will be carried out fairly so they will receive the promised rewards. Although school-based performance award programs can narrow the curriculum, they can also provide goal focus as well as data feedback loops that help teachers to evaluate and improve their own teaching practice. The experience of a number of first-generation programs suggests cautious optimism about the use of these programs. In conjunction with an overall policy strategy to support teachers in improving student performance, school-based performance pay can be effective."

Paying Teachers for What They Know and Do: New and Smarter Compensation Strategies to Improve Schools, Allan Odden and Carolyn Kelley, Corwin Press, 2002. pp. 163-164.

DISCUSSION

There is an increasing amount of research on performance programs and teacher incentives, yet no definitive link has been made between incentives for teachers and increases in student achievement.21 Only a few states and school districts across the country have begun experimenting with performance pay and incentive models to recruit and retain teachers with the hope of increasing student achievement and performance. Additional states and school districts have been observing the success and failure rates of other programs and are in the process of pursuing their own incentive programs. These programs are being implemented in more predominately low-income (high-poverty), lowperforming and geographically challenging schools with a high percentage of minority and socioeconomically disadvantaged students. The reasoning behind offering incentives is the hope of boosting overall student test and achievement scores, and to increase student attendance and reduce dropout rates. For a discussion of the use of diversified compensation systems targeting at-risk schools see the fourth issue paper in this series, The Use of Diversified Compensation *Systems to Address Equitable Teacher Distribution.*

There is significant disagreement among stakeholders regarding which programs or incentives actually work or are effective, and how they are funded or will be funded years down the line. New compensation systems can cost more than traditional systems and funding can be difficult to sustain whether from state appropriations, local tax increases, or grants from private organizations and foundations. Additionally, successful compensation changes need to reflect local needs, organizational capacities and realistic financial projections – not just copy existing models.²² For a discussion of the use of funding issues see the first issue paper in this series, *Funding Issues in Diversified Compensation Systems*.

Educators, administrators and policymakers are cautioned when thinking about or attempting to implement pay-for-performance programs based on increased student achievement. Several incentive or pay-for-performance programs have ended due to several factors:

- Insignificant dollar amounts awarded to successful teachers
- Lack of agreed-upon and objective measures of teacher performance
- Opposition to alternative-compensation systems by collective bargaining agents

- Difficulty in creating an effective process for identifying high-performing teachers
- Lack of rigorous evaluation to assess, and possibly recalibrate, the program's components to bring it to scale more effectively.²³

Evaluation or assessment of student academic achievement is a valid concern. How this achievement is measured and whether the methods used are effective or not is consistently argued. To hold a teacher responsible for increased student achievement when there are various factors that affect a student's ability to learn, as well as outside influences on their test-taking ability, is seen by some educators and administrators as unfair. However, assessing a student's academic growth versus advances in achievement scores has been one way proponents claim will circumvent this problem.²⁴

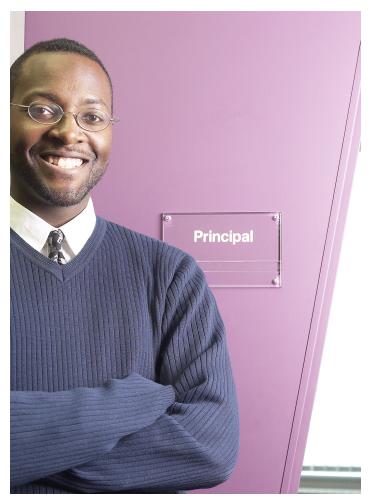
Experts in the field recommend that test scores and results should not be the only factor in determining the effectiveness of teachers. Additionally, reliance on one statistical measure is not recommended because evaluation is complex and involves a variety of factors, therefore various methods should be explored and utilized.²⁵ It is important to include participation in professional development and mentoring programs, classroom observations, portfolio reviews and discussions with teachers in determining their effectiveness on increased student achievement. These factors can assist in determining whether the teacher excels, whether s/he needs support and if incentive pay is warranted. For a discussion of non-student related teacher evaluation methods see the second Issue Paper in this series, *Teacher Evaluation in Diversified Teacher Compensation Systems*.

Questions to consider when attempting to gauge or measure student achievement gains via tests:

- What type of test should be given multiple choice, essay, short answer or a combination of these? Should students be tested on memory or thinking skills? Should the use of standardized achievement tests based on item response theory or multiple choice be used; or performance-based assessments designed to elicit critical thinking, problem solving and communication skills?
- How often should students be tested once a year, twice a year, every year or every two years?
- Which grades should be tested? Or should students be tested at each grade level?
- Should additional measures, such as value-added methods or learning objectives, or a combination

- of these be used to assess or evaluate student achievement?
- How is test data scored and assessed or analyzed?
- Where and how is the achievement data stored? How is data tracked and how can it be streamlined to be used in the future – across district and state lines?

What policymakers, researchers, critics, educators and administrators do seem to agree on is that something needs to be done to ensure ALL students receive an equal and high-quality education. The accepted way to achieve that goal is to provide them with effective teachers. Educators who have the ability and the desire to instruct students under difficult circumstances and who are capable of increasing student achievement are being sought out by at-risk and lower-performing schools with the intention of closing the achievement gap and retaining them via financial rewards and compensation programs. There are numerous questions that should be addressed when considering whether to implement pay-for-performance programs where teachers, administrators and staff are evaluated based on increasing student achievement.



REFERENCES

Anderson, Sharon, Donna Fowler, Steve Klein and Chrys Dougherty. *Judging Student Achievement: Why Getting the Right Data Matters*. MPR Associates and the National Center for Educational Accountability, MPR/NCEA Policy Brief, September 2005. http://www.dataqualitycampaign.org/files/Tools-Judging_Student_Achievement.pdf

Arreola, Ph.D., Raoul A. Writing Leaning Objectives: A Teaching Resource Document from the Office of the Vice Chancellor for Planning and Academic Support. The University of Tennessee, Memphis, 1998. http://www.utmem.edu/grad/MISCELLANEOUS/Learning Objectives.pdf

Ballou, Dale. Sizing Up Test Scores. Education Next, Summer 2002.

Berry, Barnett and Ed Fuller. *The Value of Value-Added Methods in Identifying Effective Teachers*. Center for Teaching Quality, May 1, 2006. http://www.teachingdata.org/pdfs/vam_bberry.pdf

Braun, Henry I. *Using Student Progress to Evaluate Teachers: A Primer on Value-Added Models.* Educational Testing Service (ETS), September 2005. http://www.ets.org/Media/Research/pdf/PICVAM.pdf

Pay-for-performance: Key Questions and Lessons from Five Current Models. Education Commission of the States (ECS), Issue Paper, June 2001. http://www.ecs.org/clearinghouse/28/30/2830.htm

Assessment. Education Week, Research Center. http://www.edweek.org/rc/issues/assessment/?print=1 (Accessed November 2006.)

Exstrom, Michelle. "Top Pay for Top Teachers: Getting and Keeping Top Teachers May Depend on How We Pay Them." *State Legislatures Magazine*, National Conference of State Legislatures (NCSL), September 2006.

Guthrie, James W. and Matthew G. Springer. *Teacher Pay for Performance: Another Fad or a Sound and Lasting Policy.* Education Week, April 5, 2006. http://www.edweek.org/ew/index.html

Kelley, Carolyn. *Financial Incentives in State Accountability Systems: Performance Pay for Teachers.* Consortium for Policy Research in Education (CPRE), September 10, 2002.

Makkonen, Reino and Kristen Arnold. *Reforming Teacher Pay: The Search for a Workable Goal-Driven Compensation System*. WestEd Policy Trends, 2005. http://www.wested.org/cs/we/view/rs/797

McCaffrey, Lockwood, Koretz and Hamilton. Evaluating Value-Added Models for Teacher Accountability. RAND Education, 2003.

Milanowski, Tony and Allan Odden. *Teacher Compensation Remains a Challenge*. Wisconsin Center for Education Research, November 2006. http://www.wcer.wisc.edu/news/coverStories/teacher_compensation_remains.php

No Child Left Behind Policy Brief: Data-Driven Decisionmaking. Education Commission of the States (ECS), 2002. http://www.ecs.org/clearinghouse/35/52/3552.pdf

Odden, Allan and Carolyn Kelley. *Paying Teachers for What They Know and Do: New and Smarter Compensation Strategies to Improve Schools.* (California: Corwin Press 2002.)

A Quick Guide to Leaning Objectives. NW Link, May 28, 2000. http://www.nwlink.com/~donclark/hrd/templates/objectivetool.html (accessed December 2006). Faculty Resources Quick Tips. Park University, Parkville, MO. http://www.park.edu/cetl/quicktips/writinglearningobj.html (Accessed December 2006).

Plucker, Jonathan A. Jason S. Zapf and Sarah A. McNabb. *Rewarding Teachers for Students' Performance: Improving Teaching through Alternative Teacher Compensation Programs.* Center for Evaluation & Education Policy (CEEP), Education Policy Brief, Volume 3, Number 5, Spring 2005.

Snow-Renner, Ravay and Marga Torrence. *No Child Left Behind Policy Brief: State Information Systems*. Education Commission of the States (ECS), 2002. http://www.ecs.org/clearinghouse/34/61/3461.pdf

Stedman, James B. and Gail McCallion. *Performance Based Pay for Teachers*. Cornell University, Congressional Research Service, January 11, 2001. http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1046&context=key_workplace

Fact Sheet on the Major Provisions of the Conference Report to H.R. 1, the No Child Left Behind Act. United States Department of Education. http://www.ed.gov/nclb/overview/intro/factsheet.html (Accessed November 2006).

United States Department of Education. No Child Left Behind Act, Title II, Part A, Section 2101. http://www.ed.gov/policy/elsec/leg/esea02/pg20.html (Accessed November 2006).

Teacher Incentive Fund. United States Department of Education. http://www.ed.gov/programs/teacherincentive/index.html (Accessed November 2006).

United States Department of Education. http://www.ncela.gwu.edu/newsline/archives/2006/11/teacher_incenti.html (Accessed November 2006).

Fact Sheet: America's Teachers: Fulfilling the Promise of No Child Left Behind. The White House, September 22, 2004. http://www.whitehouse.gov/news/releases/2004/09/20040922-1.html (Accessed November 2006).

ENDNOTES

- ¹ Allan Odden and Carolyn Kelley, *Paying Teachers for What They Know and Do: New and Smarter Compensation Strategies to Improve Schools.* (Thousand Oaks, CA: Corwin Press, 2002).
- ² H.P. Hatry, J.M. Greiner, and B.G. Ashford, *Issues and Case Studies in Teacher Incentive Plans*. (Washington, DC: The Urban Institute, 1994); A.M. Mohrman, S.A. Mohrman, and Allan R. Odden, "Aligning Teacher Compensation with Systemic Reform: Skill-Based Pay and Group-Based Performance Awards." *Educational Evaluation and Policy Analysis*, 18 (1996): 51-71; R.J. Murnane and D.K. Cohen, "Merit Pay and the Evaluation Problem." *Harvard Educational Review*, 56(1) (1986): 1-17.
- ³ Assessment, [report online] (Research Center, *Education Week*, accessed November 2006): available from *Education Week*: http://www.edweek.org/rc/issues/assessment/?print=1
- ⁴ Barnett Berry and Ed Fuller, *The Value of Value-Added Methods in Identifying Effective Teachers*, [report online] (Center for Teaching Quality, May 1, 2006, accessed November 2006): available from the Center for Teaching Quality: http://www.teachingdata.org/pdfs/vam_bberry.pdf.
- ⁵ Barbara Elizabeth Stewart *Value Added Modeling: The Challenge of Measuring Educational Outcomes.* Carnegie Corporation of New York 2006. http://www.carnegie.org/pdf/value_added_chal_paper_mockup.pdf
- ⁶ Barnett Berry and Ed Fuller. *The Value of Value-Added Methods in Identifying Effective Teachers*. [report online] (Center for Teaching Quality, May 1, 2006, accessed November 2006): available from the Center for Teaching Quality: http://www.teachingdata.org/pdfs/vam_bberry.pdf
- ⁷ Dale Ballou. "Sizing Up Test Scores," *Education Next*, Summer 2002: 10-15. (13)
- ⁸ Henry I. Braun. *Using Student Progress to Evaluate Teachers: A Primer on Value-Added Models.* (Education Testing Service (ETS), September 2005), p.2. http://www.ets.org/Media/Research/pdf/PICVAM.pdf
- ⁹ Dale Ballou. "Sizing Up Test Scores," Education Next, Summer 2002: 10-15. (13)
- ¹⁰ Stewart, Barbara Elizabeth. *Value Added Modeling: The Challenge of Measuring Educational Outcomes*. Carnegie Corporation of New York, 2006. http://www.carnegie.org/pdf/value_added_chal_paper_mockup.pdf
- ¹¹ A Quick Guide to Learning Objectives. [template online] (NW Link, May 28,2000, accessed December 2006): available from NW Link: http://www/nwlink.com/~donclark/hrd/templates/objectivetool.html
- ¹² Raoul A. Arreola, PhD.; Writing Learning Objectives: A Teaching Resource Document from the Office of the Vice Chancellor for Planning and Academic Support. (University of Tennessee, Memphis, 1998), 2.

 http://www.utmem.edu/grad/MISCELLANEOUS/Learning. Objectives.pdf
- http://www.utmem.edu/grad/MISCELLANEOUS/Learning_Objectives.pdf
- ¹³ Faculty Resources Quick Tips. [report online] (Park University, Parkville, MO, accessed December 2006): available from Park University: http://www.park.edu/cetl/quicktips/writinglearningobj.html
- ¹⁴ Sample learning objectives from the Denver ProComp program. For more information see the Denver ProComp website at http://denverprocomp.org/
- ¹⁵ Student Assessment Program for Public Schools, [statute online] (Florida Statute §1008.22, accessed November 2006): available from Florida Legislature: http://www.flsenate.gov/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFI D=6083937&CFTOKEN=61451426
- ¹⁶ Ravay Snow-Renner and Marga Torrence. *No Child Left Behind Policy Brief: State Information Systems*. [report online] (Denver: Education Commission of the States (ECS), 2002, accessed November 2006): available from ECS: http://www.ecs.org/clearinghouse/34/61/3461.pdf
- ¹⁷ Ed Fuller, *Creating Teaching Quality Data Systems*. [PowerPoint presentation online] (Presented at the Education Commission of the States (ECS) and National Conference of State Legislatures (NCSL) Policy Forum on Teacher Compensation Redesign in Wilmington, DE April 28-29, 2006, accessed December 2006): available from ECS: http://www.ecs.org/ecsmain.asp?page=/html/issues.asp
- ¹⁸ Sharon Anderson, Donna Fowler, Steve Klein and Chrys Dougherty. *Judging Student Achievement: Why Getting the Right Data Matters*. [report online] (MPR Associates and the National Center for Educational Accountability, MPR/NCEA Policy Brief, September 2005, accessed November 2006): available from MPR/NCEA:
- http://www.dataqualitycampaign.org/files/Tools-Judging_Student_Achievement.pdf
- ¹⁹ Ravay Snow-Renner and Marga Torrence. *No Child Left Behind Policy Brief: State Information Systems*. [report online] (Denver: Education Commission of the States (ECS), 2002, accessed November 2006): available from ECS: http://www.ecs.org/clearinghouse/34/61/3461.pdf
- ²⁰ Ibid and *Fact Sheet on the Major Provisions of the Conference Report to H.R. 1, the No Child Left Behind Act.* [report online] (United States Department of Education, accessed December 2006): available from the U.S. Department of Education: http://www.ed.gov/nclb/overview/intro/factsheet.html

- ²¹ Reino Makkonen and Kristen Arnold. Reforming Teacher Pay: The Search for a Workable Goal-Driven Compensation System. [report online] (WestEd Policy Trends, 2005, accessed November 2006): available from WestEd: http://www.wested.org/cs/we/view/rs/797
- ²² Tony Milanowski and Allan Odden. *Teacher Compensation Remains a Challenge*. [report online] (Wisconsin Center for Education Research (WCER), November 2006, accessed November 2006): available from WCER: http://www.wcer.wisc.edu/news/coverStories/teacher_compensation_remains.php
- ²³ James W. Guthrie and Matthew G. Springer. Teacher Pay for Performance: Another Fad or a Sound and Lasting Policy? [commentary online] Education Week, April 5, 2006, accessed November 2006): available from Education Week: http://www.edweek.org/ew/index/html
- ²⁴ Pay-for-Performance: Key Questions and Lessons from Five Current Models. [paper online] (Denver: Education Commission of the States (ECS), June 2001, accessed November 2006): available from ECS: http://www.ecs.org/clearinghouse/28/30/2830.htm
- ²⁵ Henry I. Braun. Using Student Progress to Evaluate Teachers: A Primer on Value-Added Models. (Educational Testing Service (ETS), September 2005), p 15. http://www.ets.org/Media/Research/pdf/PICVAM.pdf

