The Promises and Pitfalls of Alternative Teacher Compensation Approaches

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(effective August 2007)

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April 2007

http://www.greatlakescenter.org

Executive Summary

What is the "best" way to pay teachers? Few policy makers are pleased with the current system, but attempts to move toward merit pay have largely been short-lived and unsuccessful. While there is no perfect teacher compensation system, research evidence can help policy makers choose and adapt a plan likely to work well within a particular context. Critics of both traditional compensation and newer alternatives are quick to point out the strengths of the system they support, but the limitations of individual systems are frequently misunderstood or unrecognized. To improve the viability of a new plan, policy makers and stakeholders should conduct extensive analyses before implementation.

Specifically, when considering an alternative compensation system, it is recommended that policy makers:

- Assess the district's or state's goals. Goals should be identified and prioritized.
- Determine whether and how new financial incentives might help meet these goals, whether it is feasible to motivate teachers to pursue a particular goal, and whether factors in the compensation system are aligned with existing programs.
- Design a compensation system aligned with intentions. Choices among teacher compensation systems involve variable cost, complexity, and tradeoffs; each alternative has unique advantages and challenges. In addition, the political context within which the system will operate must be considered, especially whether there will be long-term political and financial support.

The Promises and Pitfalls

of Alternative Teacher Compensation Approaches

Introduction

What is the "best" way to pay teachers? This question periodically reappears on the policy agenda amid concerns that the current system may undermine efforts to improve teacher quality. Policy makers ask whether it makes sense to continue paying teachers based only on their experience and education, or whether such a system merely rewards mediocrity. They wonder whether it would be better to base teachers' pay on their activities in the classroom or on their students' learning, or whether such a change would undermine cooperation among colleagues or encourage an unhealthy level of teaching to the test. This policy brief examines ways that different compensation systems are likely to affect teacher behavior and, as a result, student learning.

Reward systems can potentially encourage specific behaviors among existing teachers, provide some teachers with incentives to remain in teaching and others with incentives to leave, or attract different types of people into the teaching profession. Understanding the likely consequences of different compensation systems allows policy makers to design systems that are well suited to their particular goals.

This policy brief offers a survey and discussion of different compensation systems in order to help stakeholders and policy makers understand of their relative advantages and disadvantages, facilitating better-informed discussion and more effective planning. The first section of the brief offers an overview of the history of teacher merit pay and provides context for more recent developments. This is followed by a discussion of the three main types of teacher compensation systems: the uniform salary schedule, performance- (or behavior-) based compensation, and outcome-based compensation. To explore the likely consequences of each system, this segment includes findings not only from teacher compensation studies but also from compensation studies in sectors as varied as manufacturing and professional sports. We cannot assume that findings from other sectors will be directly applicable to K-12 education, but these studies can help support or refute reasonable, but unexamined, assumptions about the ways compensation policies are likely to affect schools. Following that, individual and group reward systems are compared, and the implications of piece rate programs (those that base rewards on attainment of fixed goals) are compared to relative rankings (those that base rewards on how an individual compares to all the other teachers in the system). The concluding section provides policy makers with guidelines for designing alternative compensation programs.

A Brief History of Teacher Merit Pay

Historical Roots

In 1862, England established a system of teacher compensation known as "payment by results." Under this system, teacher salaries were dependent on student attendance and on the number of students passing examinations. This would be typical of merit pay programs for the next century. This policy generally linked teacher salaries to student outcomes in a relatively straightforward manner, with little attempt to consider differences among student populations when calculating teacher rewards. Opinions about payment by results varied, but current concerns about merit pay echo many criticisms first voiced in the 1800s. These included concerns about (a) the impossibility of a test capturing everything that matters about teaching; (b) the instability of test results from year to year due to random fluctuations unrelated to teachers' efforts; (c) the inconsistency of tests and testing conditions; (d) the incentives created by merit pay policies for teachers to focus on certain students and certain material; (e) the incentives for teachers to cheat; and (f) the incentives for teachers to move to schools with wealthier students, who are considered more likely to pass examinations regardless of the quality of instruction they receive.[1;2] There was little evidence that the program had its intended effect of encouraging teachers to perform at higher levels.[3;4] In fact, some evidence suggests that the program encouraged teachers to behave in ways that were inconsistent with quality teaching. One teacher even wrote that, "When one of my backward boys died of bronchitis a few weeks back I felt a measure of relief; for his death would make one failure less."[5]

Despite these criticisms, payment by results persisted for 35 years. Its eventual demise was due to a combination of factors. One was school inspectors' dissatisfaction with the system. As the years passed and the inspectors responsible for program implementation retired, they often voiced criticisms. One inspector described payment by results as "an ingenious instrument for arresting the mental growth of the child,"[6] since rote memorization of tested material was encouraged, while another complained that one byproduct of payment by results was that "Children are passing out of the state-aided schools of to-day by thousands without having gained a love of learning, in fact with a positive dislike of acquiring knowledge."[7] Among the other contributing factors were that teachers, largely opposed to the system, were beginning to organize and gain power over their working conditions, and that educational leaders as well as the public were becoming critical of the curriculum and pedagogy rewarded and encouraged by the system.

Attempts to link teacher pay and performance arose in the United States early in the 20th Century. During the Progressive Era, there was great interest among educational administrators in tying teacher salaries to their performance, consistent with the focus on efficiency that dominated both the public and private sectors during that time. Ellwood Cubberly and other leading educators advocated the use of merit pay plans on the grounds that they would increase system efficiency and help attract and retain the best teachers.[8] As was true in the

Victorian period in England, these plans generally tied teacher pay to student performance. By 1918, almost half of surveyed U.S. school districts had instituted some form of merit pay for teachers. These programs were usually short-lived, however.[9]

Proposed compensation plans were often contentious, pitting teachers, administrators, civic associations, and teachers unions against each other. For example, an attempt in 1917 to introduce merit pay in St. Paul, Minnesota, covered extensively by the media, caused such discord that it "polarized the city."[10] The district superintendent was an enthusiastic supporter of merit pay, and many local school administrators similarly expressed support. Both the local teachers union and teachers themselves were generally opposed, however. In other arenas, opinion was also split. The Housewives League, a union-like organization, opposed the plan, but 18 out of 22 women's civic groups favored it. At the height of the controversy, after 14 teachers and principals had just been fired because of their vocal opposition, the pro-merit-pay superintendent resigned to accept a higher-paying position in Buffalo, and the idea was abandoned.

Other cities also eventually lost interest. By 1928, enthusiasm had abated, and fewer than 20 percent of U.S. districts reported using merit pay.[11] In 1939 one scholar noted that districts were "discarding all attempts to reward teachers according to subjective ratings of efficiency."[12] Elsbree explained to his contemporaries that

the harmful effects on teacher morale of applying rating devices appear to more than offset the good that is derived.… [S]ince rating tends to accentuate rivalry it is, therefore, regarded as a destructive device to use in rewarding teachers, [and]…the total contribution of an individual teacher to the development of a particular child cannot be measured accurately.[13]

Again, the criticisms of merit pay outlined here resonate with contemporary concerns: teacher disapproval, destruction of cooperative spirit, and the difficulty of developing and implementing valid and reliable measures of performance.

Interest in merit pay rekindled when Sputnik's 1957 launch revived concerns about the quality of America's schools. At that time, roughly 10% of U.S. districts began using merit pay, although the majority of programs survived five or fewer years.[14] Only one-third of surveyed school districts that had a merit pay plan in 1959 still had the plan 10 years later.[15]

Interest arose yet again in the 1980s, when the frightening portrait of American education in *A Nation at Risk* left policy makers searching for ways to improve schools. President Reagan suggested: "Teachers should be paid and promoted on the basis of their merit and competence. Hard-earned tax dollars should encourage the best. They have no business rewarding incompetence and mediocrity." By 1985, 25 states had mandated incentive pay programs for teachers.[16; 17] Houston, for example, implemented the Second Mile Plan, which provided financial incentives for entering teaching as well as for high student test scores, low absenteeism, and teaching in geographic or subject-shortage areas. During the first two years of the program, evaluators found conflicting results. Measured factors—mainly student test scores and teacher attendance—had improved, but teachers generally reported that the Second Mile Plan had not

encouraged them to work harder, develop themselves professionally, or come to work every day.[18] By the early 1990s, many programs, including the Houston plan, had disappeared.

As this overview suggests, merit pay programs have historically tended to be short-lived. A 1978 Education Research Service survey found that 183 school districts had experimented with merit pay plans for an average of six years before abandoning their programs and that one-third of the plans had survived two years or less.[19; 20] The most common reasons for discontinuation were problems in conducting evaluations, administrative difficulties, teacher resistance, inadequate funds, and inadequate measurement instruments.[21] When a similar survey was administered in 1983, the reasons given for plan discontinuation were similar.[22] A more recent study followed up on a set of merit plans studied in 1983 and found that 75 percent of the plans had been discontinued by 1993.[23]

In districts where merit pay plans do persist, the plans have often evolved to become merit pay programs in name only. Extra pay can become tied to tasks outside classroom instruction or is awarded to virtually everyone.[24] Participation can become voluntary, with only a few teachers quietly participating.[25] Some plans also change (but do not necessarily become diluted) by greater teacher involvement in designing the reward structure.[26]

Recent Renewed Interest

Merit pay has again attracted the attention of both policy makers and academics. Minnesota and Florida have state-wide policies in place, with Florida's old policy (just amended in April of 2007) requiring every school in the state to distribute a portion of teacher compensation based on student test-score improvements.[27] Minnesota's Q-Comp policy,[28] approved and funded for implementation in 35 school districts and 14 charter schools according to the state Department of Education, includes both teacher performance and student test-score components.[29;30] The federal government, too, has again recently increased its support for and involvement in teacher merit pay. The Department of Education's Teacher Incentive Fund (TIF) will grant up to a total of $99 million for the design and implementation of performance- and outcome-based compensation systems in high-need schools. A total of 16 TIF grants totaling $42 million were awarded in 2006.[31] Recently, Congress reduced TIF funding to $200,000 in fiscal year 2007, but the program will continue in a reduced form.

The Teacher Advancement Program (TAP) has also influenced recent merit pay initiatives and legislation. The Milken Family Foundation created and funded TAP, a hybrid plan that includes elements of both performance- and outcome-based compensation. While only a few districts have implemented TAP in all of their schools, individual schools and clusters of schools throughout the country are using the program.[32] Minnesota's statewide Q-Comp initiative, while not identical to TAP, is based on the program as well.[33]All the new efforts hold promise, but none is likely to be a magic bullet. The following sections discuss the advantages and disadvantages of the main three types of compensation systems.

Three Types of Teacher Compensation Systems

Three types of teacher compensation systems are prevalent: the uniform salary schedule used in most districts, performance -based systems, and outcome-based systems. Systems similar to the uniform salary schedule are typical in unionized professions, where hours worked and years of service primarily influence compensation rates. Performance-based systems (also known as behavior-based systems) tie some portion of salary to observable teacher behavior, such as demonstration of a specific pedagogical technique. Outcome-based systems (also known as pay for performance) link compensation to student performance, such as test scores and attendance. Florida's old system, mentioned above, was an example of an outcome-based system. Minnesota's plan, which includes both performance -based and outcome-based components, is a hybrid program. Denver's new Pro-Comp system is also an example of a hybrid program.

The Uniform Salary Schedule

A uniform salary schedule is used in approximately 95% of public school districts.[34] Teachers are rewarded for years of teaching experience and for graduate coursework and advanced degrees. The salary schedule applies to all teachers in a district, regardless of subject or grade level, and it is often negotiated by union representatives. When policy makers discuss teacher compensation alternatives, they tend to have a more sophisticated understanding of the uniform salary schedule than they do of alternative systems precisely because it is so prevalent. Policy makers frequently offer the valid criticism that this approach does not reward high levels of teacher effort or student achievement, but it has several important advantages as well.

Advantages

Pedagogical Freedom

Under the uniform salary schedule, teachers can take pedagogical risks without facing corresponding financial risks. Teachers can learn new, ultimately more effective ways of teaching without worrying about a temporary drop in student performance—and salary—while they are mastering a new pedagogy. This is a particularly important benefit in districts that may experience significant demographic change (such as an influx of English Language Learners) because it allows teachers to try new methods with new students. A related benefit is that teachers have no financial incentive to adopt rewarded pedagogical techniques that may not be effective with a particular group of children. In contrast, merit pay systems sometimes provide teachers with financial incentives to use particular pedagogies which might or might not be effective in every classroom.

Collegiality

Uniform salary schedules also allow teachers to help each other without being penalized. In systems where individual teacher performance or outcomes are ranked and additional pay goes to teachers near the top of the scale, teachers

actually have a financial incentive to undermine, rather than assist, each other. Even in individual reward systems that reward absolute, rather than relative, measures, teachers have an incentive to concentrate on their own teaching, rather than wasting precious time and energy helping others. In contrast, the uniform salary schedule provides no disincentive for helping behaviors and is consistent with current norms of congeniality and collegiality.

Perceived Objectivity

Teachers generally believe that the uniform salary schedule is objective.[35] This is not a trivial benefit. If the compensation system is perceived as capricious, administrators risk spending a great deal of time and effort dealing with complaints and low morale.

Minimal Monitoring

Another benefit is that the uniform salary schedule requires minimal monitoring.[36] It is easy to determine a teacher's years of experience, particularly when a teacher remains in the same school for many years, and teachers can be required to submit a certified transcript when they apply for salary credit based on coursework. The costs of obtaining the information necessary to effectively administer the uniform salary schedule are relatively low compared to the costs associated with alternatives.

Predictability

A final advantage is predictability of salary expenditures. Unless union negotiations force an unexpected change in the salary schedule, districts can predict anticipated teacher salary outlays with a high degree of accuracy. School districts in the U.S. generally work within a state school-finance system that supplements locally raised revenues with a foundation grant determined by a set formula; they have limited ability to rapidly increase school revenues. Districts may be willing to forgo perceived benefits of incentive programs in order to maintain fixed, predictable salary costs.

Challenges

Lack of Incentive for Hard Work

The main objection to the uniform salary schedule is that it provides no financial incentive for teachers to work hard. Salary depends on experience and education; performance is not a factor. While other forces may encourage teachers to improve, the compensation system does not. With no link between performance and pay, administrators forgo potentially effective leverage to force teachers to improve. If a teacher knows what needs to be done and chooses not to do it, supervisors' punitive toolbox includes placing negative reports in the teacher's official file, which can eventually lead to dismissal (although due process hurdles are substantial for tenured teachers), as well as more informal punishments, such as assignment to more difficult or unpopular classes, placement in the classroom next to the gymnasium, or assignment to hall-monitor

or school bus duty. Negotiated contracts with unions may, however, limit even these informal punishments, in part because they can be used for arbitrary or vindictive purposes as well as for purposes of pushing for better-quality work.

Discouraging Good Teachers

High-quality teachers may feel unappreciated and unrewarded under the uniform salary schedule. While they may feel intrinsic satisfaction and receive positive recognition from peers, students, parents, and supervisors, these messages will conflict with the message of mediocrity contained in their paychecks. They know that low performers in their district receive the same compensation, which may discourage high-quality teachers from persisting in the exhausting, often frustrating work of exemplary teaching.

Negative Impact on Recruitment and Retention

Another criticism of the uniform schedule is that it does not necessarily attract desired people to teaching (a characteristic known as *adverse selection*). The retail sales sector offers food for thought in this respect. In retail, salary based on hours worked without regard to productivity is widely linked to situations where there is little discretion in the job and where managers view the sales position as "just a job – just a way for people to earn some extra money. It's not a career."[37] The use of uniform salary scales in such retail jobs as well as in teaching may unfortunately imply that teaching is similarly considered more a job than a career. Such a signal can be an impediment to attracting desired candidates to teaching, a professional field requiring a great deal of discretionary decision making and where it is hoped that high performers will remain in the system for long periods. Regrettably, many bright and talented young teachers have an incentive to move to careers in business and other professions that pay a premium for their talents.

Inappropriate Rewards

A final criticism is that the commonly rewarded characteristics—experience and attainment of advanced degrees—are not necessarily the characteristics of high-quality teachers.[38;39;40] Experience seems to improve performance significantly during the first few years of teaching, but improvement levels off quickly thereafter. Also, completing an advanced degree seems to have little effect on teacher performance in the classroom.

Although the uniform salary schedule does offer several benefits and is the dominant form of teacher compensation, it also has stark imperfections: it provides few financial incentives for excellence, and there appears to be little documented correlation between what is rewarded and high-quality teaching. As discussed further below, however, it is not clear that alternatives will fare any better.

Merit Pay Systems: Commonalities

The two most common forms of merit pay systems—performance-based, which reward teachers for what they do, and outcome-based, which reward teachers for what their students do—each have unique advantages and disadvantages. Their central shared characteristic is that each in some way ties pay to performance. The unique characteristics of each system are explored in individual discussions below. First, however, this segment provides an introduction to these less well-known systems by outlining the commonalities they share as systems linking compensation to some kind of performance.

Common Advantages of Merit Pay Systems

Incentives to Improve Performance

The primary advantage of both performance- and outcome-based systems is that they each provide teachers with financial incentives to work hard and improve their teaching. Compensation is based either directly on student achievement or on teacher behaviors affecting student achievement, encouraging teachers to work on skills that affect student learning rather than on advanced degrees that may not. There is some evidence that merit pay may improve student achievement as intended, although the research is not conclusive. Figlio and Kenny found that test scores tended to be higher in schools with merit pay; however, as the authors emphasize, available data make it impossible to determine whether the merit pay systems prompted improved performance or higher scoring schools are simply more likely to adopt merit pay programs.[41] Other studies suggest that merit pay may motivate teachers to work harder, spend more time on tasks related to teaching, and better align their teaching with the recommended curriculum.[42;43;44] These behaviors are consistent with improved teaching and learning, suggesting a possible link between the merit pay systems and desirable changes.

Recruitment and Retention

In addition, performance- and outcome-based systems may encourage desirable candidates to enter and remain in teaching. Highly talented candidates and teachers have an incentive to teach in systems that provide additional pay for their superior performance. This predicted increase in work force quality is supported by a study of a very different occupation: auto glass workers. When the Safelite Glass Corporation switched from a bureaucratic pay system to piece rates, more able employees tended to remain with the firm while unproductive employees left. Newly recruited employees under the piece rate system also tended to be more able than newly recruited employees under the bureaucratic pay system had been. The quality of the company's work force improved as a result of the move to merit pay.[45]

Political Support

Compensation systems that tie pay to performance may also enjoy political support. Districts and states may find that taxpayers and legislators are

more willing to approve school funding increases if they know that the monies will be used to reward high-performing teachers rather than to provide across-the-board, uniform salary increases.

Common Challenges in Merit Pay Systems

In addition to these shared advantages, performance- and outcome-based systems share several challenges. These include difficulties in making a credible long-term commitment to merit pay, the inability of some teachers to improve without supports from the district or state, problems of imperfect understanding, and teachers' relative insensitivity to financial rewards. Each of these challenges is discussed below.

Credible Commitment

One factor affecting how teachers respond to merit pay is the likelihood that the system will continue into the future. When it is reasonable to expect a policy to continue in its present form into the foreseeable future, credible commitment exists. In such situations, teachers have an incentive to respond to the policy since they will eventually reap the rewards of any additional work they may do. Innovative compensation systems require that credible commitment exists (or that teachers perceive that it exists) if the policies are to work as intended.

Unfortunately, policy makers have rarely demonstrated a credible commitment to performance- and outcome-based compensation. Reasons vary, but one common reason is that financial and political support is frequently not sustained over time. For example, California promised teachers performance bonuses in 1999, but the state found itself short of funds and never paid the promised bonuses. In 2000, the central government in the United Kingdom mandated a performance pay system for all of its 24,000 schools. In response to funding concerns at the local school level, however, the government virtually eliminated the program in 2004.[46] There are exceptions—the Ladue (Missouri) School District has used a performance-based compensation system for more than 50 years—but they are rare.[47]

Political and institutional characteristics of public school districts often make it difficult for them to effectively enact policies that require a sustained commitment to change. School districts and state departments of education do not control their own destinies. Bureaucrats in these institutions may find themselves unable to honor commitments when the legislature slashes their budgets. Similarly, voters in a school district may freeze or roll back property taxes, leaving district officials unable to honor commitments through no fault of their own. New federal mandates may be at odds with the promises that state administrators have made to districts and teachers, and they may be forced to break those promises or face stiff sanctions. The problem is not a lack of good-hearted people; it may, to at least some degree, be an inescapable dilemma for public agencies.

In addition to limited control over their own destinies, many districts face internal challenges. Personnel turnover is a problem, particularly for urban school

districts. New superintendents and school board members come in with their own ideas and with programs that rarely outlive the new leadership, making it difficult for districts to stay the course with an innovative compensation system. Urban school superintendents remain with their districts for an average of five to six years before being replaced.[48; 49] When all districts, not just urban ones, are studied, median tenure increases to 7.5 years, but this is still a relatively short time frame if a teacher is concerned about whether a compensation policy will persist over his or her entire career.[50]

The difficulty states and districts face in credibly committing to a performance- or outcome-based incentive system would not be of great concern if teachers were unaware of the problem. There is evidence that teachers are concerned about credible commitment, however. When Minneapolis teachers were questioned about the likelihood that the district's Professional Pay Plan would still be in place five years later, more than half of teachers were pessimistic.[51] Teachers who have observed instability in past district policies may be more likely to have concerns about credible commitment. Studies of both Pennsylvania's Lead Teacher Program and the Minneapolis Professional Pay Plan have noted the residual effects of constantly changing policy directives.[52; 53] Teachers tell stories of devoting time and energy to policies that were later abandoned. Over time, they learn to ignore new policies and became increasingly cynical about the odds a new policy will persist. In other words, past experiences with unstable policies negatively affect their perception of credible commitment regarding newly introduced policies.

Credible commitment is less of an issue where the uniform salary schedule is concerned. Most districts have a long tradition of only minimal tinkering with the uniform salary schedule, so teachers tend to assume that these schedules will persist in something very close to their current form, allowing them to plan their careers and family financial commitments accordingly.

Support for Improvement

In order for merit pay to improve the quality of the teaching force, at least one of two things must happen. Either poor teachers must leave the profession and be replaced by higher quality teachers, or existing teachers must improve. Improving teacher quality through attrition is likely to be a relatively slow process. A mass exodus of poor teachers is unlikely since employers in other professions are not clamoring to hire low-quality teachers. Moreover, there is little evidence that replacement teachers will necessarily be better than those who leave.[54]

Success, therefore, would seem to depend largely on whether merit pay can and will result in the improvement of the existing teaching force. Some teachers may not be working to capacity, and it is possible that they will work harder under merit pay incentives. There is evidence of increased effort levels under merit pay; some teachers may work longer and harder.[55;56;57;58]

Other teachers, however, may want to improve and yet not know how.[59; 60; 61; 62] They may be working as hard as they can but finding their efforts fruitless. Research on elementary school teachers, for example, suggests that

many teachers possess neither the content knowledge nor pedagogical skills to teach mathematics for understanding. Such gaps in teacher knowledge affect student achievement.[63;64;65;66; 67] Approximately one-fifth of secondary science and social studies teachers have neither a major nor a minor in those subjects or related fields, and the situation is even worse in secondary mathematics and English.[42] Moreover, some scholars note significant background and cultural differences between teachers and their students, sometimes called the "demographic divide," and argue that teachers need to learn strategies for teaching diverse student populations effectively.[68;69;70; 71] Many teachers are aware of gaps in their knowledge, experience, or both, and they do not believe that hard work alone will allow them to earn merit pay rewards. They often express concern that their hard work will go unrewarded as long as they lack the skills, particularly pedagogical skills, to reach rewarded performance levels.[72; 73; 74]

Teachers with the motivation to improve, but without the necessary knowledge, need access to high-quality, sustained professional development and time to work on improvement. For a district to provide these opportunities and the release time that allows teachers to take advantage of them is expensive. For districts that experience high teacher turnover rates, this investment in individual professional development may be difficult to justify.

Imperfect Understanding

The uniform salary schedule is relatively simple to understand and, because it is so common, most teachers have experience with it. In contrast, well-designed merit pay systems are often complex and, since the parameters vary from plan to plan, even teachers who have worked under merit pay may have difficulty understanding a new program. For example, when teachers were surveyed about the Minneapolis Professional Pay Plan (MPPP), a voluntary merit pay plan, almost all of the respondents revealed an incomplete or incorrect understanding of the policy.[75] At the time of the survey, the plan had been in place for almost two years and misconceptions were not limited to arcane minutiae—almost one quarter of surveyed teachers believed that they would be rewarded for *all* professional development when, in fact, only a few district-sponsored activities were eligible for rewards.

There are two likely consequences when teachers do not understand what they need to do in order to receive rewards. First, they are unlikely to behave in desired ways. Minneapolis teachers who believed that all professional development was rewarded were not necessarily drawn into the district-sponsored MPPP activities that the plan intended to support. Second, such common misunderstandings lead to teachers becoming frustrated with merit pay. If a teacher expects a particular action to result in a reward and it does not, that teacher is unlikely to support the compensation plan. Thus, difficulties born of imperfect understanding may mute the benefits of merit pay.

Relative Insensitivity to Financial Rewards

Compensation policy is predicated on the assumption that money has a significant effect on employee behavior and decisions. While teachers are interested in financial rewards, money may play a smaller role than expected in motivating teacher behavior. Two factors may contribute to this relative insensitivity to financial rewards: small reward amounts and a tendency for teachers to deemphasize salary relative to people in other professions.

The majority of merit pay programs offer relatively small financial rewards for active participation. For example, a Minneapolis teacher who earned the maximum reward under MPPP would have earned an additional $1,500—or five percent of the salary of the lowest-paid, novice teachers—during the 2003-2004 school year. Since most teachers earn more than the minimum base salary, the rewards as a percentage of base pay would be even smaller for them. In contrast, increases of 10 to 20 percent are generally necessary before an employee finds it worthwhile to change behavior in response to a new pay incentive.[76]

Moreover, even larger financial incentives may fail to substantially increase merit pay's motivational effectiveness. In 1998, the Massachusetts legislature created and funded a program to pay academically gifted prospective teachers $20,000 signing bonuses, to be paid out over four years. (The first year bonus was $8,000, and $4,000 was paid in each of the remaining three years.) These are relatively large incentives, yet researchers found that the money had a limited impact on individuals' decisions to enter and continue teaching over the four-year period.[77] Most participants decided whether to stay or leave based on their working conditions; not a single teacher in the study considered the bonus money a factor in his or her decision.

Other evidence also suggests that teachers may be somewhat less sensitive to financial rewards than people in other professions. Teachers themselves, and many in the general public, view teaching as a poorly paid profession. In a recent study, 75 percent of novice teachers agreed that they are seriously underpaid, and 78 percent of recent college graduates agreed that teachers are seriously underpaid.[78] Given the impression of poor pay prospects, it would be surprising if those who chose to teach were highly motivated by pay. As Nieto notes, "Teachers enter the profession for any number of reasons, but neither fame nor money nor the promise of lavish working conditions is at the top of that list."[79]

Once they have entered teaching, teachers may experience normative pressures that lead them to deemphasize the importance of financial rewards. Professional norms can have a powerful impact on employee preferences and behavior.[80] Forest rangers, who often work in isolation and at pay levels below those available in the private sector, have nevertheless been found to work hard and follow Forestry Department guidelines quite closely.[81] And, having been socialized into a norm of "service before self,"[82] military officers often put forth enormous effort despite relatively small pay increases as they move up the hierarchy. Teaching is another profession where group norms influence behavior, and teachers may be socialized into a norm that makes them relatively insensitive to financial rewards.[83; 84; 85]

Research tends to support this possibility. When one study offered novice teachers a hypothetical choice between pairs of schools, one offering higher pay and the other offering such attractors as "highly motivated and effective teachers," over three quarters of respondents chose to forgo higher pay.[86] A study like this, based on self-reporting and on a hypothetical situation, must be interpreted cautiously; it's possible that normative pressure to cite altruistic reasons for teaching may make teachers reluctant to report being highly motivated by financial considerations. However, other studies have been designed to largely eliminate normative pressure for teachers to report "noble" factors as more important to them than salary.[87; 88] For example, several studies asked teachers to rank the attractiveness of hypothetical teaching opportunities by reading position advertisements. When economic incentives were emphasized in the advertisement, teachers found the position less attractive than when organizational climate (such as administrative leadership style) or the work itself (such as specific teacher responsibilities) were emphasized.[89; 90]

The evidence that teachers are relatively insensitive to financial incentives is consistent with survey results of Kentucky and Charlotte-Mecklenberg (North Carolina) teachers.[91; 92; 93] Surveyed teachers, when asked about a merit pay plan, reported being motivated to change by the promise of increased student achievement, by the positive recognition the compensation program provided, or by the fear of sanctions. They reported that the bonus money itself was not especially motivating, however. This finding is consistent with the Massachusetts findings cited above (involving $20,000 signing bonuses), but it is at odds with some teacher behavior when teachers have control over reward allocations.

A case in point is found in Kentucky. Under its program, each school's teachers voted on whether to earmark rewards for school improvement or for teacher bonuses. The teachers in 98 percent of rewarded schools voted to earmark at least some of the funds for teacher bonuses.[94] Importantly, the choice here was not between merit bonuses and straightforward raises (increases to the salary schedule). And some types of school improvement projects may not be viewed as worthwhile by teachers. It is also possible that teachers want to present themselves as altruistic and immune to the lure of mere money, but when faced with a concrete choice, their interest in increased pay becomes evident. Available evidence makes it difficult to reconcile this study with the ones cited earlier. While some evidence suggests that teachers may be less sensitive to financial rewards than people in other professions, more research is needed to determine if that is generally true. Importantly, the considerations here are focused on the degree to which financial incentives affect teacher behavior and activities; few would argue that these incentives have no affect on teachers.

The advantages and challenges outlined above apply to all merit pay systems; however, there are also important differences between performance-based and outcome-based plans. To make these clear, each of these two options is discussed in detail in the following segments.

Performance (Behavior)-Based Teacher Compensation Systems

As noted above, performance-based compensation systems link some portion of a teacher's salary to his or her performance. Often, teachers are observed in the classroom to determine if they are performing as desired, but a particular system may also allow teachers other means of demonstrating that they have acquired a desired skill set. Whatever the means of assessment, the focus of performance-based compensation is always on *teacher* performance. The assumption is that as teacher performance changes, student learning will increase. An important advantage here is that such assessment provides teachers with concrete feedback about their classroom performance, making it easier for them to understand how to improve in the future.

Advantages

One important benefit of performance-based compensation is that it provides a financial incentive for teachers to improve their teaching skills. Such a system may be particularly motivating for teachers whose evaluations are close to the thresholds for additional pay. Some supporting evidence that such motivation occurs comes from the sports arena, where it has been demonstrated that PGA golfers are more likely to increase their effort as their scores move closer to the next payoff level.[95] This is particularly true as the financial payoffs between levels increase. Performance -based systems also give teachers concrete feedback about their classroom performance, making it easier for them to understand how to improve.

Another advantage of performance-based systems is that they provide rewards for differential teacher performance without regard to such confounding influences as student background, which complicate systems based on student performance. Moreover, teacher performance can be rewarded in such disciplines as music, where standardized tests for student achievement are not available, and in schools where the student population is unstable, making student performance unreliable for determining a teacher's effectiveness. In addition, performance-based systems can be designed so that it is relatively easy for teachers to understand why pay differentials exist and what they need to do to receive higher pay.

Challenges

Still, there are problems with performance-based systems. One is that it can be difficult to connect measurable behaviors to quality teaching. It is relatively easy to count how many times a teacher asks a question requiring critical thinking, for example, but not how many times a teacher says something that inspires a student to work harder or to consider advanced study in a discipline. While a great deal is known about teaching and learning, a certain amount of mystery and magic still remain. By one estimate, only about 3% of a teacher's contribution to student achievement can be explained by skills that are easy to measure.[96] The remaining 97% is attributable to qualities such as

enthusiasm, which are not measurable and for which good proxies are not available.

To deepen the dilemma, there is no single teaching style or set of skills clearly superior to others. Some traditional teachers do a marvelous job of educating students and so do some constructivist teachers. These styles require different skills and look very different in practice, but each can be highly effective in the hands of a skillful teacher and for a particular student population. Designing a performance-based teacher compensation system that rewards all of the different manifestations of excellent teaching is an impossible task.

One way out of this dilemma would be to reward performance based on some criteria other than specific classroom practices. For example, many districts use principal evaluations as an important component of untenured teachers' annual evaluations, and it is tempting to use such evaluations for determining merit pay as well. Generalized evaluations can avoid the need to isolate specific, measurable teaching behaviors and principals are, theoretically, in a good position to identify their high and low performers. Again, however, there are complications. One recent study compared principal ratings of teachers' effectiveness with ratings produced by analysis of student test scores and parental requests for specific teachers.[97] While principal evaluations were better predictors of both value-added and parental requests than the education and experience measures used in the uniform salary schedule, that principals generally did a poor job of distinguishing teacher quality toward the middle of the distribution. That is, they were much better at identifying very bad and very good teachers than they were at discriminating among teachers between the extremes. Moreover, their ratings were biased by irrelevant factors, such as gender.

In addition, principals have often used existing low-stakes evaluations as a tool to encourage teachers and to build a team.[98] That is, they have sometimes given teachers high evaluations and then encouraged them to live up to them. Favorable evaluations are also used to foster collegiality and feelings of administrative support. If evaluations in such cases were tied to financial bonuses, however, the inflated ratings would push salaries to unacceptably high levels. In a performance-based system, school principals are likely to face pressure to keep average ratings at or below a certain affordable level, undermining the traditional motivational uses of high teacher evaluations. Given these problems, generalized principal evaluations are probably not an appropriate solution to measurement problems.

Recent research has begun to shed some light on other possibilities. For example, subject-specific, carefully designed evaluations may do a much better job of identifying teacher activities that improve student achievement.[99] When examining four districts with teacher evaluation systems that were considered exemplars, for example, researchers found that a subject-specific evaluation system did a better job of identifying high-quality teachers (identified as teachers whose student test gains during the year exceeded expectations) than the uniform salary schedule, which privileged experience.[100; 101] In addition, a positive, significant relationship existed between overall evaluation scores and student achievement.[102;103;104; 105] On average, researchers estimated that average student

achievement increased by between .10 and .15 standard deviations for each one level rise (in a three-level system) in teacher evaluation ratings.[106] Unfortunately, the strength of the relationship varied substantially depending on the particular research site, the grade and subject taught, and which subject area's student test scores were used.[107; 108; 109; 110]

An additional issue arose when researchers parsed out the components of the overall evaluation score. In Cincinnati, planning and professionalism domain scores were more highly correlated with student achievement than instructional domain scores.[111] This leads us back to the difficulty of measuring what matters. While instructional ability is clearly an important factor, and one that teachers should be encouraged to improve, proxies for it are so poor that planning and professionalism appear to have a greater effect on student achievement than the actual instruction students receive. Even the exemplary performance measures examined in these studies failed to discriminate between teachers who were adept at closing the achievement gap within their classrooms and those whose teaching maintained or increased the gap—a shortcoming that could have serious implications for equity.[112]

Another disadvantage of performance-based teacher compensation systems is that they are vulnerable to teacher abuse. Financial incentives may lead teachers may to take advantage of the system by concentrating primarily on measured behaviors and ignoring equally important but unrewarded teaching aspects, such as enthusiasm. Such a tendency to overemphasize rewarded activities has been observed in other groups, such as NFL quarterbacks and computer programmers.[113; 114] This is not to say that teachers will ignore anything not measured by the system; instead, it simply points to the reality that teachers' attention to non-rewarded behaviors will be in spite of the compensation system, rather than because of it. Since much of good teaching remains unmeasurable, it is conceivable that the quality of teaching might deteriorate even as measured and rewarded performance improves. Given the complexity of teaching, performance-based systems simply cannot assess teachers on the full range of desired behaviors, and every move toward more complex and inclusive measurement lessens administrative feasibility.

The problem of appropriate evaluation is compounded by the possibility that teachers may concentrate on rewarded behaviors only when being assessed.[115] Most teaching takes place behind closed doors; a teacher could choose to do the difficult work of high quality teaching only when being observed by an evaluator.

Performance-based systems include other incentives for undesirable teacher activity. Teachers may try to manipulate their class makeup to increase the proportion of easy-to-teach students in an attempt to make their teaching appear smooth and effective. High school teachers might encourage challenging students to transfer to a different class or to leave school altogether. Teachers with a particular gift for working with challenging populations might be discouraged from doing so. For example, a teacher who is particularly effective at working with mainstreamed, emotionally conflicted children might find it

financially prudent to minimize the number of these children placed in his or her classroom since any disruptive behavior could negatively affect the evaluation.

Performance-based systems may actually create a perverse incentive for school districts to decrease professional development opportunities for teachers.[69] School districts have a limited ability to fund rising salaries, as their income is usually determined by somewhat rigid state-level funding formula. While a district may want all of its teachers to improve, it may not be able to afford the increased demand for professional development to support teachers' improvement, nor might it be able to pay for the resulting performance-based salary increases as teachers increasingly perform in desired ways.

Moreover, performance-based teacher compensation systems are more expensive to administer than the uniform salary schedule. Someone must evaluate teachers, and usually a trained evaluator does so through multiple classroom observations. The costs of these evaluations—including costs for evaluator training, time spent conducting the evaluations, and time spent documenting compensation decisions—can be considerable. The time invested in the process is increased if teachers choose to attempt to influence the evaluator. Any evaluator's decisions might be challenged, since good teaching cannot be reduced to a list of objective activities and since appropriate activities are context dependent. In addition, the evaluator can only observe a small slice of the teacher's job, and employees are particularly likely to try to influence evaluators under these conditions.[116] Rather than trying to improve their teaching—a daunting task—teachers may spend large amounts of time on the evaluator's pet projects or on convincing the evaluator that the observed lesson occurred on an atypically bad day. The use of multiple evaluators can minimize this problem, but it raises assessment costs. In addition, having fellow teachers serve as evaluators may contribute to biased judgments and undermine collegiality. Teachers who feel their evaluations were harsh may be unwilling to cooperate with their colleagues on non-compensation issues.

Finally, unlike the uniform salary schedule and outcome-based systems, performance-based systems may discourage teachers from revealing their weaknesses and seeking assistance.[117] Teachers who are struggling may try to hide their poor performance so that it does not negatively affect their pay.

Outcome-Based Teacher Compensation Systems

Given the difficulty of measuring teacher performance and the imperfect relationship between measurable performance and outcomes, outcome-based teacher compensation systems that focus on student outcomes can be an attractive alternative. Still, they are not ideal. As discussed above, teacher activity is not the sole determinant of student achievement, and disentangling the influence of other factors is a Herculean task. And yet, outcome-based systems have a deceptively simple appeal: if we want teachers to improve student achievement, why not reward them for doing so? Scholars and educators who urge caution are sometimes dismissed as obstructionist preservers of the status quo, and the arguments made on both sides often ignore the interplay of benefits and problems

created when outcome-based systems are adopted. A more thoughtful analysis is in order.

Advantages

One benefit of this type of system is that it focuses attention on results rather than teacher performance. There is no agreed-upon best method for teaching all children, so ideal teacher performance cannot be objectively specified; a focus on student results allows teachers to use their professional expertise to decide the best way to reach particular students.

Teachers may also like the apparent objectivity of outcome-based systems. Teachers are often familiar with the student tests and other criteria (such as student attendance) used in these outcome-based systems, which might provide a degree of comfort with assessment measures. They may also appreciate the fact that favoritism cannot influence evaluation and compensation under such a system.

An additional advantage is that outcome-based systems, unlike performance-based measures, encourage teachers to seek assistance in weak areas. Teachers can openly discuss their shortcomings and work with colleagues and administrators on improving, since doing so will enhance rather than lessen the chances of receiving incentive pay.

Political benefits may also come from an outcome-based system, since holding teachers responsible for student learning makes sense to the public. Such measures as test scores are easily reportable and familiar to the public. Since taxpayers fund public schools, it is important that they support high-profile policies such as these.

Challenges

Though these are distinct advantages, there are also disadvantages in an outcome-based system. One comes from that fact that past merit pay plans have often assessed teachers based on students' absolute scores on tests, rather than on how much their scores have improved. Thus, a teacher whose students have gained 20 points but remain below some cutoff will be rated—and rewarded—more highly than a teacher whose students have gained only five points but scored over the threshold. This may exacerbate the existing maldistribution of talented teachers by providing additional financial incentives for teachers to prefer working with more high-achieving students. Many affluent suburban districts already offer higher base salaries than their inner city and rural counterparts. Tying pay to student performance will not rectify the problem that schools in low-SES communities have attracting good teachers and may make it even worse. Wenglinsky found that socioeconomic status and teacher quality have almost equal influence on students' mathematics achievement.[118] Students in low-income communities desperately need these top-notch teachers, who tend to be effective for students at both high and low achievement levels. Yet past outcome-based compensation systems have given high quality teachers an additional financial incentive to transfer to affluent schools since they are more likely to receive achievement bonuses in those schools.[119]

Even when teachers feel that it is generally appropriate to hold them accountable for student achievement, they may be concerned about being penalized for outside factors, such as lack of parental support, that are beyond their control.[120] In fact, when schools have received individual performance goals that do consider factors such as student SES, teachers have still expressed concern about whether these goals are fair.[121]

These concerns are valid. South Carolina initiated an outcome-based incentive program in 1984 that grouped schools into bands to prevent more affluent schools from earning disproportionate awards. Although rewards supplemented school funds rather than teacher salaries, it is still worth noting that this system in South Carolina tended to reward wealthier schools within each band.[122] When researchers simulated several alternatives to the existing banding program, they found that while the favored groups changed, each alternative still favored one type of school over another.

To address such issues, some school districts have recently turned to value-added achievement measures, an increasingly popular strategy that attempts to isolate individual teacher's contributions to student learning. Designers of value-added systems hope that this will be more just and will minimize financial incentives to move to more affluent schools. A potential problem, however, is that value-added systems may institutionalize low expectations for certain students, since past performance is used as a predictor of future potential. Another problem is that teachers can control only their own behavior in a given school year, but many factors outside of their control affect student success. Is it fair to sanction a teacher for poor performance if he or she put forth a strong effort but did not receive enough textbooks from the central office that year? Is it the teacher's fault if the curriculum mandated by the state is not culturally relevant within the local community and parents do not support efforts to teach it? In business, sales departments often blame poor quality for low sales, while production departments blame halfhearted sales efforts.[123] While the public may blame teachers for low student achievement, teachers may blame factors outside of their control and, accordingly, feel that the value-added system is unfair.

Despite the fact that, methodologically, value-added systems are becoming increasingly sophisticated, there is evidence that even the best attempts to isolate teachers' contributions to student achievement suffer from measurement errors due to score volatility and a lack of comparability across grade levels.[124; 125; 126] Increasing the number of tests included in the compensation system and using data from multiple years improves reliability, but adds to the cost of program administration. In addition, if multiple years of data are included, teachers may be unwilling to expend effort on performance improvements that will not be rewarded for several years. Such a pattern was observed in Navy recruiters: as the period between rewards lengthened, effort was reduced.[127] Extending the period between rewards may be a particular problem in education where merit pay plans have tended to be short-lived; teachers may hesitate to expend effort when the merit pay plan may not even survive the measurement cycle.

Another potential problem with the value-added approach is the complexity of most value-added systems. Teachers are unlikely to trust a

compensation system they do not understand, and value-added systems are generally quite difficult to understand.[128] Additionally, even if teachers trust the system, they may have trouble understanding the complicated relationship between their specific actions and the resulting gain in student scores. This makes it difficult for them to improve their performance.

Both the absolute score and value-added approaches for measuring student outcomes assume that we can easily measure a teacher's effect on student outcomes across student populations and subject areas. This is often not the case. For example, teachers in specialty areas, such as music, and teachers of special populations, such as autistic children, may have valid concerns about the measures that will be used to evaluate their students' performance.

As with performance-based systems, administration and monitoring costs are higher under outcome-based systems than they are under the uniform salary schedule. Student outcomes must be matched to particular teachers, and testing conditions must be similar across classrooms to allow for comparisons. Consideration for transient students and those with special challenges such as limited English proficiency must be developed, incorporated into the plan, and communicated. In addition to the complexity of designing a system that teachers will understand and consider fair, the design and maintenance of an outcome-based system is often expensive. The high cost of administration and monitoring may reduce the total money available for teacher salaries.

For better or worse, salary expenses will rise if the program is effective. Teachers will work harder and improve their skills, student achievement will increase, and teachers will earn incentive pay. The combined effect of higher salary expenses and higher monitoring costs may be more of a financial burden than districts or states are willing or able to tolerate.

Then, too, teachers may have an incentive to discourage certain types of students from remaining in their classes under an outcome-based incentive system, even more so than under performance-based systems.[129] This is true with value-added approaches, which are still far from perfect, and it is doubly true of approaches that directly use student test scores. If students are unlikely to be high achievers, teachers may discourage them from enrolling in their classes. Teachers may also spend time and effort trying to influence school administrators to give them "good" students. These attempts to curry favor with the administrators responsible for student-teacher assignments may encourage ability grouping and undermine collegiality within a school. Teachers are unlikely to work well with peers who are trying to steal all of the "good" students for their own classes. While teachers may already engage in some of this behavior for other reasons, outcome-based compensation gives teachers a financial incentive to do so.

In addition to manipulating their class makeup, teachers have a financial incentive to focus on students whose achievement is relatively easy to improve. They may under-serve gifted students, since these children will have relatively high achievement even without a great deal of teacher attention; it is very hard to move children from the 97th percentile in achievement to the 99th percentile. Children with disabilities may also be ignored, either because they are excluded

from the tested population or because the achievement levels of non-disabled children are easier to increase.

Outcome-based systems may also encourage teachers to take a short-term view of improvement. One empirical study found that mutual fund managers change their behavior after interim return figures are released to the public.[130] If a fund shows an above-average interim return, managers act very conservatively for the remainder of the year. If the fund has below-average interim returns, managers take much greater than normal risks for the remainder of the year. Once the new year begins, both groups revert to their normal behavior until the following year's interim return figures are released. Similar results have been observed elsewhere. Navy recruiters tend to engage in behaviors such as high school visits that will improve long-term recruitment efforts early in their measurement cycle but, if they are close to a reward cutoff, they will engage in short-term recruitment efforts as the end date for rewards approaches.[131] Outcome-based pay may encourage teachers to take actions that maximize their short-term chances of receiving merit pay each year, even if those actions are not the ones that maximize their long-term growth as excellent teachers or maximize their students' learning.

Such systems also give teachers financial incentives to concentrate on the knowledge needed for the current year's assessments rather than spending time introducing ideas that will not be tested until the following year. Education is cumulative; concepts may be introduced one year but not tested until the child has been exposed to them several times. Under outcome-based systems, the third-grade teacher has no incentive to spend time on concepts that will not be tested until they are taught in more detail the following year. This may leave the third graders ill-prepared for the next year, and the fourth-grade teacher's compensation may suffer as a result. In addition to its negative impact on cumulative student learning, such a situation is hardly a recipe for improved teamwork and collegiality.

In addition, measures used in outcome-based compensation systems tend to be limited, often focusing on academic achievement as measured by standardized tests. This raises concerns about narrowed curriculum. While some evidence cited above indicates that rewards must be substantial before they are likely to influence teacher activity, other research offers some evidence that employees in the public sector may be particularly likely to focus their attention on rewarded outcomes even when the amount of the reward is small.[132] This suggests that teachers may focus on rewarded outcomes simply because they provide clear, measurable objectives in an otherwise complex and sometimes contradictory environment. If policy makers care only about standardized test results, a system that heavily rewards teachers for test results is fine. This is unlikely to be true, however; society has historically had multiple, and often conflicting, goals for its schools.

The tendency of outcome-based compensation systems to target effort toward narrow goals may explain why they appear so infrequently in the public sector. Most public agencies, including schools, have numerous competing goals, and high-powered incentive programs do not work well in this type of

environment.[133; 134] For example, there is some evidence that teachers concentrate on measured indicators even when this focus in inconsistent with exemplary teaching and learning. Kentucky teachers concentrated on rewarded skills even when it meant deflecting thoughtful student questions.[135]

When researchers study outcome-based programs, they often find that programs have a positive effect on rewarded outcomes.[136;137] This may not be unequivocally good news, however. For example, improved student test scores are a cause for celebration only if they reflect increased student learning, not if they reflect manipulation of the reward system by teachers, which is not always the case.[138] When the teachers in a Michigan alternative high school were offered a bonus for each student who completed their courses, the student course completion rate did improve. If the underlying purpose of the program had been course completion, that would have been fine, but the true goal was improved student learning. During the same period that course completion was improving, student attendance in class was actually declining. Students were being persuaded not to drop classes (the rewarded measure) but they were not being persuaded to come to class. Also, there was anecdotal evidence that teachers were diluting their coursework expectations to encourage students to remain enrolled in their classes.

Policy makers may increase the number of measured goals in an attempt to correct for this problem. The use of multiple measures may confuse teachers and make them distrust the system, however, and it often adds to cost. Another problem with increasing the complexity of the system is that it may give teachers more opportunity to use the system to their own advantage. As the complexity of executive compensation programs increases, executives find increasing opportunities to manipulate the system; the result is that they are paid extremely well when performance is outstanding but are still paid relatively well even when they perform badly.[139] Teachers may discover ways to manipulate complex systems as well, particularly when they are involved in system design.

Outcome-based systems give teachers a financial incentive to focus strongly on tested items—and even to cheat on the test. Cheating can take many forms, from outright changing of student answers to more subtle means such as encouraging absenteeism on testing day for certain students. Jacob and Levitt found that Chicago teachers were more likely to cheat when there were even relatively small incentives to do so; Figlio found that, following the introduction of a high-stakes accountability system in Florida, low-achieving students were suspended at higher rates during testing periods.[140; 141] While encouraging students to cheat would never be desirable, the consequences of focusing on tested items are somewhat less clear. If the tests are well designed, aligned with the curriculum, and include attention to higher-order thinking skills, problems are minimized. On the other hand, if a test's main virtue is that it is inexpensive, rather than excellent, the disadvantages of teaching to the test are obvious.

Through careful monitoring, it may be possible to minimize teachers' tendencies to focus disproportionate attention on certain students or portions of the curriculum. But such monitoring not only increases cost, it gives rise to new issues when it is used in the public sector where career bureaucrats make any

number of complex judgments daily, often relying heavily on institutional tradition. Once again the challenge of evaluating teaching comes into play, since it is complex and no set of rules can describe the full range of classroom decisions that must be made.[142] This means that monitoring in teaching, as in many other parts of the public sector, must be both close to particular situations and sensitive to changing conditions. In a study of the Federal Job Training Program, these conditions were found to not be met and monitoring was ineffective.[143] Even after monitoring problems were recognized, however, the presence of multiple stakeholders with conflicting goals and an entrenched bureaucracy made it difficult to reach consensus about how to improve the system.

Variations: Individual and Group Reward Systems

Outcome-based reward systems can be based on a teacher's individual efforts or on the combined efforts of a larger group, often the entire faculty of a school. While group reward systems can be performance-based (for example, goals could be specified for a group of teachers, with rewards depending upon the achievement of the entire group), in practice, they have generally been based on student outcomes.[144;145; 146] Like other possibilities, individual- and group- based systems each have particular advantages and challenges.

Individual Reward Systems

A major strength of individual rewards is that they provide high performers with a strong incentive to remain in teaching, and they provide low performers with a strong incentive to leave. An individual teacher's accomplishments are not muted by colleagues' lesser performance; individuals are financially accountable for their own teaching.

On the negative side, individual financial rewards for student performance do nothing to encourage teachers to help colleagues or perform tasks such as hall duty that help the school function smoothly yet provide few individual benefits.[147] In fact, quite the reverse is true; teachers are financially better off if they focus only on directly rewarded tasks rather than those where benefits accrue to others, such as assisting novices.[148] Once again, evidence of such a potential outcome comes from another field. In a study of physicians in group practice, teamwork (measured as the frequency with which physicians discussed another group member's case in an advisory capacity) was less likely to occur when group revenues were divided according to individual case revenue than when revenues were split evenly among the group's physicians.[149]

Perhaps the greatest challenge to an individual reward system is also its greatest strength: the credit for performance is allocated to individuals. It is true that the ability to earn individual rewards can be highly motivating. In teaching, however, everything from prior academic achievement to the discipline policies of a child's other teachers can affect both the individual teacher's ability to teach and his or her students' achievement. Assigning credit under such circumstances is difficult to do simply yet fairly. This leads some merit pay proponents to favor group-based rewards.

Group Reward Systems

Group-based rewards explicitly recognize the collaborative nature of any school's effectiveness by rewarding a school's teachers for their collective effort. Collective results are often easier to measure and monitor than individual results, so group-based systems are generally less costly to administer than their individual-based counterparts. Still, while group-based systems may lessen the measurement problems in an evaluation system, they do not eliminate them. Problems of reliability remain,[150] as do problems of appropriate allocation of credit and blame. While the collective efforts of a school's faculty are better recognized in a group reward system, the problem of screening out effects of the district, prior schools, parents, and community remains.

An important advantage of group rewards is that they encourage teachers to help their colleagues, since financial rewards depend upon the entire group's performance. Group systems also provide incentives for teachers to participate in activities that benefit the school as a whole, even when individual benefits for participation are small. But, while such collegiality is highly desirable, it is not guaranteed. It is true that group rewards do not have the perverse incentive to undermine colleagues often embedded in individual reward systems; however, group rewards do offer incentives for cheating or for gaming the system and may fail promote collegiality as expected.[151] As Malen puts it, "Deception and deceit are not compelling rallying points for teacher collaboration. Rather, they may be sources of division and derision that become every bit as troublesome as the faculty strains that occurred under individual-based merit pay."[152]

Unfortunately, group-based reward systems may also provide high-performing teachers with incentives to leave low-performing schools where they are often needed the most. Even in the absence of strong financial incentives, teachers tend to prefer schools with high-achieving students.[153] Group-based rewards may strengthen this preference. Within schools, overall teacher quality is the main source of variation in student achievement; an individual teacher has a limited ability to raise the group's average.[154] Group rewards give all teachers an incentive to go to a high-performing school, and high performers are the ones most likely to have an opportunity to do so. Experience has already provided an example of this problematic outcome. In North Carolina, sanctions and rewards embedded in the state's accountability system exacerbated the problem of high-quality teachers migrating to schools with high-achieving students.[155] Thus, group-based reward systems may worsen the current, inequitable distribution of high-quality teachers among schools.

Free riding is another problem with group-based systems. An individual teacher can put forth minimal effort and still receive a financial reward as long as his or her colleagues behave responsibly. Similarly, if the teacher believes his or her colleagues will free ride, that teacher has no incentive to work hard since the free riding of colleagues will prevent receipt of the reward. Either way, individuals may have an incentive to put forth minimal effort. We might expect higher-quality workers to monitor their lower-quality colleagues and encourage them to improve, but empirical evidence is mixed.[156; 157] Teaching has historically had a norm of autonomy: teachers do not interfere with each others'

decisions about how and what to teach.[158] When asked to take on professional roles inconsistent with that norm, there is some evidence that teachers may resist.[159] Teachers may be unlikely to interfere with the work of their lower-quality or free-riding peers.

Group-based systems also provide high-quality teachers with few incentives to work to capacity, since they will only receive a small portion of the reward for their effort; most of the reward will be distributed to other group members. Again an example from business may be relevant: a study of service representatives for a discount brokerage firm found that the introduction of a group reward system increased the productivity of low quality workers, but the productivity of high quality workers remained static or declined.[160]

Under a group-based system, high-quality teachers may decide to leave teaching altogether and move to an industry with individual rewards, if they believe that their skills will transfer to other occupations. Low-quality teachers, on the other hand, have an incentive to remain in teaching since they can receive a financial reward derived from the work of their colleagues. Group-based systems are also more likely to appeal to individuals who value collegiality, while individual rewards may be more attractive to those who are more competitive.

Variations: Piece Rate and Relative Ranking Incentive Systems

The link between the measure used in performance- or outcome-based compensation and increased pay can be established in two ways. The first of these—piece rate—means that rewards are earned by attaining an absolute, fixed goal. In these systems, teachers are told prior to the beginning of the measurement period what performance or outcome level they must reach in order to receive rewards. The second—relative rankings, or tournament—offers rewards based on how an individual compares to all the other teachers in the system. Teachers are told what percentage of top performers will receive rewards prior to the beginning of the measurement period.

Piece Rate Systems

The main advantage of a piece rate system is that it provides teachers with a clear target to be reached. In a properly designed piece rate system, the teacher's reward is dependent only on his or her own ability and effort. The teacher has no financial incentive to undermine the work of colleagues since the number of winners in this system is limitless.

One disadvantage of piece rate systems is that they make it difficult for the district to keep salary expenditures at predetermined levels. If earned bonuses exceed projections, whether because of higher-than-expected effort or random fluctuations, administrators may face a budget shortfall. As mentioned, school districts have limited control over their ability to meet unexpected expenses, so this problem provides a strong disincentive for the use of piece rate systems. One study of merit pay systems found that almost 17% of districts had eliminated their merit pay programs because the programs were too expensive.[161] More

recently, a centrally mandated performance pay system in the United Kingdom was virtually eliminated after only a few years, largely due to complaints about the higher salary costs being borne by local schools under the program.[162]

Another disadvantage of piece rate systems is that teachers may collectively refuse to meet bonus criteria in an attempt to get the standard for rewards lowered. This is a common problem when piece rates are used in the factory setting.[163;164;165; 166]

Relative Ranking Systems

Relative rankings avoid both of these problems. This approach allows the district to determine the amount of incentive pay to be rewarded and sets the cut off in the rankings so that it matches available funds, thus providing few incentives for voluntary work restrictions. There is no standard to lower; rewards are simply based on comparative performance. High performers have an incentive to encourage lower performers to restrict their output so they can easily maintain their high relative rankings, but lower performers have no financial incentive to agree to do so.

Relative rankings may also protect teachers from the effects of random shocks that affect the entire group.[167; 168] For example, suppose that a testing company renorms the test used by a district to assess teacher outcomes, increasing the difficulty of achieving results above the national norm. With relative rankings, the same proportion of teachers is still eligible for rewards even if overall performance dips. In a piece rate system, the renorming would make it more difficult for teachers to receive rewards through no fault of the teachers themselves.

The main problem with relative rankings is that they discourage cooperative behavior among coworkers.[169] This is a serious disadvantage in a profession such as teaching where cooperation and teamwork are highly valued attributes. Beyond the disincentive for cooperation, rankings provide coworkers with an incentive to sabotage each other's work. Every teacher who feels that he or she might have a chance of earning a reward has a financial incentive to undermine the work of colleagues. The system is a zero-sum game designed to have winners and losers, and few people like to lose.

Piece rate and relative ranking systems may be attractive to different types of people. Tournaments may appeal to people who enjoy competition, while piece rates may attract those who value collegiality. Teaching has historically attracted people with a relatively collegial disposition;[170] this might change if relative rankings become common.

Conclusion: Implications and Advice

There is no perfect compensation system for teachers. The uniform salary schedule is easily understood, its salary outlays are predictable, and its administrative costs are minimal. This system fails to provide teachers with a financial incentive for high quality performance, however, and it may discourage desirable candidates from selecting and remaining in teaching. Many teachers, administrators, and policy makers are comfortable with this system since its use is

so prevalent, but maintaining the status quo makes sense only if it is working tolerably well—and there are those who would argue that it is not. Performance- and outcome-based systems can be attractive alternatives, but state and district policy makers need to design new systems carefully, considering the goals and the idiosyncrasies of their own situations as well as the strengths and disadvantages of each alternative compensation system.

When choosing among compensation systems, there are several steps that policy makers should take: first, assessing the district's or state's goals; second, considering whether and how new incentives might help advance those goals; and third, designing a compensation system aligned with intentions.

Assessing Goals

Many districts and states already assess their goals and needs regularly. The results of those studies can be used to identify strengths that can be exploited as well as current limitations to be addressed. For example, a state may have well-designed standards in place, but a school may find that teachers rarely refer to these standards when designing the classroom curriculum. Or, a district may offer extensive professional development opportunities, but those opportunities may be poorly aligned with student needs as determined by a variety of assessments. The district may offer extensive opportunities in the teaching of reading and writing, but those opportunities may be poorly aligned with standardized tests that consistently show low student performance in math. Once policy makers identify and prioritize their pressing goals and needs, they can next determine which, if any, are amenable to the influence of financial incentives directed at teachers.

Identifying Teacher Incentives

Some of a district's goals can be advanced by teachers' efforts, while others, such as those requiring capital improvements, are beyond a teacher's reach. If policy makers decide to move to a merit pay system, goals and needs that teachers can appreciably influence must be clearly identified and then linked to specific rewards in the compensation system.

When deciding which factors to reward financially, policy makers should consider the importance of the particular goal, the feasibility of motivating teachers to pursue it, and whether factors in the compensation system are aligned with existing programs. For example, a district may feel that its teachers need extensive professional development in order to improve student achievement in reading, mathematics, and science. Trying to improve all of these at once will probably overwhelm both district resources and teachers' abilities to learn new content and pedagogy. In such circumstances, the prospect of likely failure may function as a disincentive to attempt any improvement at all. Policy makers might instead identify reading as their highest priority, decide to focus efforts on reading across content areas, and then provide financial incentives for teacher or student performances that reflect improvement.

The feasibility of particular goals is affected by their scope and by the timetable of the reward structure. Some weaknesses are easier to remedy than others, and a state or district will want to make sure that teachers have a reasonable chance of reaching targeted goals in a reasonable time frame. If rewards are all tied to long-term goals, teachers may become discouraged before they can earn any rewards. In many cases, ambitious goals can be effectively approached in a series of manageable, short-term steps that allow motivated teachers to experience success.

Financial rewards should be well-aligned with existing policies and supports. For example, a district's policy makers may feel that improving the quality of its special education program is an important goal. In order to reach that goal, they might choose to focus on the quality of teaching received by mainstreamed special education students, rewarding either specific teacher behaviors or improved student outcomes. Neither strategy, however, is likely to be effective if the district is simultaneously requiring teachers to participate in four different professional development initiatives, none of which focus on the teaching of mainstreamed special education students. Specific incentives should be examined in the context of other facets of state or district operations and available technical support.

Another reason to take care with alignment is that it may yield budgetary advantages. When the compensation system is aligned with other programs, funds for the non-salary aspects of the compensation system (technical support, monitoring, measurement, etc.) may be partially provided by existing budget items like Title 1 and teacher professional development programs.

Finally, aligning new incentives with existing policies may make it easier for teachers to understand the new system. If teachers are already familiar with targeted areas of improvement and related instructional strategies, they will need to be educated only on how the new compensation policy will relate to familiar goals.

Designing an Appropriate System

Once a district or state has identified goals and considered the feasibility of using financial incentives reach those goals, policy makers need to design a compensation system specifically tailored to their context. If they are reasonably content with current conditions or have determined that targeted financial incentives are unlikely to produce substantive improvements, they may opt to continue using the uniform salary schedule. Or, they may move to a performance-based, outcome-based, or hybrid system.

Table 1 summarizes the main characteristics of these choices. Using this table, policy makers can decide which system or combination of systems best suits their unique context. Specific goals, the incentives most likely to be effective in pursuing them, and existing technical capacity must all be considered. For example, one state or district may have a value-added accountability program in place that would lend itself to an outcome-based system. Another might already have a high-quality teacher evaluation program so that a performance-based system might make sense. Readers must remember that this policy brief simply provides only an overview of various compensation systems; policy

makers must thoughtfully sift through the details and nuances offered here, considering them in the context their own schools.

Table 1: Comparison of Teacher Compensation Systems

System Type	Uniform Salary Schedule	Performance-based Systems	Outcome-based Systems
Financial incentive to improve performance?	No	Yes	Yes
Encourage high performers to enter/remain in teaching?	No	Yes	Yes
Potential challenges?	Rewarded behaviors are often only loosely related to quality performance.	It is difficult to identify and measure effective teacher performance.	It is difficult to eliminate confounding influences, such as student background.
Administrative costs?	Minimal	Depends on complexity, can be high	Depends on whether necessary data is already collected for other purposes
Unit of measurement?	Teacher behaviors (education and experience)	Teacher behaviors	Student outcomes
Complexity and ease of understanding?	Familiar and simple to understand	Well-designed systems are often complex and can be difficult to understand.	Well-designed systems are often complex and can be difficult to understand.
Provides feedback for improvement?	No	Generally yes	Generally no
Encourages teachers to seek assistance in weak areas?	Neutral	Can discourage this behavior	Yes
Major unintended consequences[1]	Lack of incentive for hard work May discourage good teachers	Teachers may concentrate on rewarded behaviors to an unhealthy degree. Well-designed systems are often expensive.	Teachers may overemphasize rewarded areas. Persistent measurement difficulties make it difficult to allocate rewards fairly.

[1] This listing is incomplete. A more thorough treatment of unintended consequences is included in the main body of the text.

If policy makers select a performance-based, outcome-based, or hybrid system, they must next choose between individual or group rewards and between piece rate or relative ranking systems. Rewarding individuals will not promote helping behaviors, but it will minimize free riding. The reverse is true of group rewards, which encourage helping behaviors but offer opportunities for free riding. A piece rate system (attainment of an absolute, fixed goal to earn rewards) is neutral regarding helping behaviors, but makes it difficult to control salary costs. Relative ranking systems allow the state or district to keep salary costs under control, but discourage helping behaviors among teachers.

Further, policy makers should consider the political context within which the policy will operate. Teacher "buy-in" is essential if compensation programs are to succeed. Teachers might vehemently oppose an outcome-based system but be willing to discuss performance-based systems. Concurrently, key legislators or voters may be interested in funding an outcome-based system but leery of performance-based systems. Policy makers need to consider how political realities in the environment will affect the compensation system's viability.

A related consideration is how to embed credible commitment in the new policy. The best designed system will likely fail if policy makers do not take steps to ensure that there is sufficient political and financial support for it. In the shorter term, support from funding entities is necessary if reward amounts are to be large enough to encourage desired changes. Learning new teaching activities is often difficult and time consuming, and small financial incentives may not be sufficient to convince teachers to undertake the effort.

Dependable political and financial support is also essential for the system's long-term survival. Broad political support improves the chances that a system will enjoy sustained support. Changes in legislative make-up, union leadership, or within the educational institution are less likely to result in abandonment of the policy if multiple stakeholders support it. In addition, funding should be a critical aspect of policy design, rather than an afterthought. Short-term grants neither enhance the likelihood of the systems' long-term survival nor send teachers the message that a policy will remain in place for the long term. More productive strategies might include the use of dedicated property taxes to fund alternative compensation or long-term legislative commitments.

Although these concerns about credible commitment pose challenges, there are strategies to address them. Policy makers can agree to external constraints to ease stakeholder concerns. For example, a district might sign a memorandum of understanding with union officials guaranteeing the terms of the compensation system for multiple years. Local boards of education can exercise restraint and patience, minimizing turnover in the superintendency and providing stable administrative support. Superintendents themselves can ensure that new hires understand and support the compensation system, and they can provide necessary training for its consistent and correct implementation. Concerns about funding can be minimized through the use of dedicated property taxes, as was the case recently in the Denver Public Schools,[171] or through long-term legislative commitments. While such steps cannot guarantee credible commitment, they can send a clear message to teachers that the district is doing everything possible to

make sure the system is stable, thus increasing the likelihood that innovative compensation systems will persist despite education's constant pressure for change.

Recommendations

As policy makers consider the best way to meet their needs and ensure long-term political and financial support, the compensation system is likely to become increasingly complex. Complexity is desirable when it minimizes the limitations of a particular system while effectively promoting specific goals, but, as discussed earlier, complexity can also make the policy difficult to understand. The importance of educating teachers and other stakeholders about a proposed new system cannot be overestimated.

Specifically, when considering an alternative compensation system, it is recommended that policy makers:

- Assess the district's or state's goals. Goals should be identified and prioritized.
- Determine whether and how new financial incentives might help meet these goals, whether it is feasible to motivate teachers to pursue a particular goal, and whether factors in the compensation system are aligned with existing programs.
- Design a compensation system aligned with intentions. Choices among teacher compensation systems involve variable cost, complexity, and tradeoffs; each alternative has unique advantages and challenges. In addition, the political context within which the system will operate must be considered, especially whether there will be long-term political and financial support.

Acknowledgements

This research was produced with editorial assistance from the Arizona State University Education Policy Studies Laboratory. The author wishes to thank Doug Harris, Patricia Hinchey, Kevin Welner, and anonymous referees for their valuable comments. David Arsen, Thomas Hammond, David Plank, Gary Sykes, and Suzanne Wilson also provided valuable comments in earlier versions. All remaining errors are the author's responsibility.

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[27] Honawar, V. (2007, March 28). Legislature Votes to Replace Merit-Pay System in Florida. Education Week. 26(29), p. 16. Unlike the old, rigid merit pay system, the new Merit Award Program "would allow students to take state, national, or locally produced tests, along with the FCAT. Districts would have greater say in how many teachers were rewarded, and they could also determine how much of the teacher's raise would be based on test results. The evaluation would also consider a teacher's subject knowledge, skill in managing classrooms, and ability to gear instruction to students' needs."

[28] "Q-Comp" is the commonly used name for the Minnesota pay system formally known as the Alternative Teacher Professional Pay System, or ATPPS.

[29] *Minnesota Department of Education, "Current Topics: Q-Comp."* Retrieved April 20, 2007, from http://education.state.mn.us/MDE/Teacher_Support/QComp/index.html

[30] It should be noted that the state's administrative regulations for Q-Comp are currently the subject of a legal challenge.

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[33] The description of Q-Comp, or ATPPS, as based on TAP is drawn from personal communications at the 2005 TAP conference (Hilton Head, SC, Nov. 11-14), where the author spoke with TAP officials, administrators from Minnesota schools and school districts, and teachers and representatives from local Minnesota teacher union chapters.

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