

INTRODUCTION

In the 1920s, the current single-salary schedule for teacher pay was established and relied entirely upon on a teacher's tenure and education level. Since then, researchers have generally concluded that neither experience nor the attainment of a Master's degree is a strong predictor of teacher quality.¹ In short, research finds experience may matter in the early years of a teacher's career, but its importance weakens over time: the average teacher's skills increase measurably in the first few years of teaching; after that there is a much weaker relationship between experience and teaching skills. Moreover, the attainment of a Master's degree correlates with higher student achievement for certain subjects (e.g., mathematics and science), but when measured across all teachers and all types of degrees, the average Master's degree shows little correlation to student achievement.² Given these findings, a number of school districts have attempted to move away from the common tenure/degree based pay structure to a variety of alternative compensation methods.

Teacher compensation reform shows strong potential to align educational resources with the goal of improved student achievement. Reformed compensation packages can attract and retain higher quality teachers, prompt the development of best practice skills and knowledge, and define and maintain a desired organizational culture.³ These elements act in concert to improve teacher quality and student achievement.

Early teacher compensation reform efforts focused on merit pay and career ladders. Merit pay systems typically distributed a fixed pool of awards based on subjective reviews by supervisors or peers. The programs lacked success due to competition among teachers, unclear definitions of excellent performance, and unstable funding.⁴ Career ladder programs provided leadership positions to teachers who surpassed certain standards. Like merit pay, these programs ultimately proved neither lasting nor effective: they were very costly, and suffered from unstable funding and insufficient assessment systems that teachers viewed as arbitrary and untrustworthy.

More recently, many school districts and states have undertaken teacher compensation reforms of a new sort. These efforts, which focus on paying teachers for what they know and do, appear to be longer lasting and more closely aligned with the standards-based reform movement. The Education Commission of the States identified three goals that underlie school district adoption of these alternative compensation systems:⁵

- Reward teachers for engaging in professional development activities, and for developing and demonstrating knowledge and skills that are aligned with school, district, and statewide goals.

- Link teacher compensation to progress in student achievement.
- Attract and retain effective teachers in low-income or other hard-to-staff schools or high-need subject areas such as mathematics and science.

To achieve some or all of these goals, pioneering districts have implemented compensation systems that vary considerably in their specific designs but draw their roots from the following general approaches, which we will describe in detail later in this report:

- **Knowledge and skill-based pay.** Pay varies with the development and demonstration of core competencies deemed critical to school and district goals. Knowledge and skill-based pay provides a strong incentive to focus professional development on the targeted needs of schools. Knowledge and skills are considered enduring characteristics of teachers and therefore teachers are typically rewarded for knowledge and skills through increments to base pay.
- **Performance awards.** Districts pay more if a school, or individual teacher, meets or exceeds student achievement targets. Performance awards provide an incentive to focus instruction and improvement efforts on advancing teaching and learning around specified achievement targets. Performance awards are viewed as rewards for extraordinary effort and therefore are typically paid as bonuses, rather than as part of base pay.
- **Market incentives:** Districts pay more to teachers who serve in hard-to-staff positions. Market incentives are designed to increase the supply of highly qualified teachers in specific subjects or for specific hard-to-staff schools by making education more competitive with other market opportunities (e.g., encouraging individuals to choose to teach science rather than use their skills to obtain a more highly paid position as a scientist in the private sector). These incentives are most appropriately designed as an increment to base pay to enhance the market competitiveness of specific teaching positions.

Districts have implemented more than one approach at a time. For example, Douglas County Colorado's long-running alternative compensation system incorporates elements of knowledge and skill-based pay and performance awards while Denver's new ProComp system incorporates all three approaches.

The Education Commission of the States has identified three features of successful compensation reform efforts⁶:

- **Stakeholder involvement.** Teachers must be closely involved in the design of the alternative compensation system and collaborate with administrators, parents, and policymakers.

- **Educator support and training.** Professional development, training, and evaluation reforms must accompany and support the alternative compensation system.
- **Sustained commitment.** Educators must perceive the new system as a permanent change. If teachers expect performance bonuses will disappear during fiscal downturns, the incentive effect of the reform will weaken.

PURPOSE OF THE PAPER

The balance of this paper outlines a state policy that would encourage Oregon school districts to adopt alternative methods of compensating their teachers. The proposal outlined here calls for a voluntary program, modeled on a recent Minnesota law that would allow school districts to opt-in to teacher compensation reform. In exchange for replacing the single-salary schedule with an approved alternative, the state would pay districts a supplemental appropriation to support the implementation of the alternative pay structure.⁷

The next section discusses how the state might establish the minimum conditions for district participation, set a supplemental appropriation, and evaluate the program's effects on student achievement and other desired outcomes.

The paper's final sections describe the existing alternative systems from which districts could likely choose an alternative and then point to system designs in specific districts.

DEVELOPING STATE-LEVEL SUPPORT FOR ALTERNATIVE COMPENSATION REFORM

Research on alternative compensation systems consistently shows that compensation plans need to be designed locally to ensure buy-in and sensitivity to the unique features and needs of the organization.⁸ Thus, compensation reform in Oregon should begin with the understanding that a single alternative system cannot address the needs or goals of the state's 198 school districts. In short, a compensation system that might work and appeal to teachers in Portland schools may make little sense in South Umpqua.

Rather than identify a single model, or models, for implementation, this paper recommends adopting Minnesota's approach to compensation reform recently enacted through the Q-Comp program. Through the program, school districts opt-in to an alternative compensation system in exchange for increased per student revenue. The advantages of the program are manifold. First, the program is voluntary, so districts with stakeholders who are strongly opposed to the notion of compensation reform are unaffected. Second, the program is light on prescription and allows and, in fact requires, districts to develop their own pay systems that are aligned with their own

educational goals and labor market challenges. Finally, Minnesota's supplemental appropriation recognizes the costs associated with designing and implementing an alternative compensation system by providing resources to support teacher knowledge and skill-development, teacher assessment and assessment of student progress, as well as funding rewards to teachers and schools for knowledge and skill development and exceptional effort in working toward and achieving educational goals. The system recognizes that teachers should be financially rewarded—overall—if they accept more variation in pay.

The design of a state-sponsored compensation reform must:

1. Identify the minimum conditions that districts must meet in order to have “reformed” their compensation system.
2. Set the amount of the supplemental appropriation that certified districts may receive.
3. Establish a mechanism that assures stable funding over a specified time horizon.
4. Provide both formative and summative evaluation data to support program refinement and to evaluate whether the reform succeeded in its goals and is worth continuing.

Each of these implementation design issues is described in more detail below.

IDENTIFY MINIMUM CONDITIONS FOR THE REFORM

Identifying the minimum policy conditions that qualify as “reform” is the most challenging of the design issues. The state will have to strike a balance between *prescription*, to ensure a meaningful change in compensation policy, and *flexibility* to allow for innovation and solutions tailored to local needs and conditions.

Drawing, in part, on the Q-Comp framework, Oregon's participating districts would have to:

- Eliminate the single-salary schedule.
- Prevent any teacher's compensation paid before implementing the alternative pay system from being reduced as a result of participating in the system.
- Develop a system of job-embedded professional development consistent with the goals of the compensation system with clear measures for demonstration of teacher success.

Minnesota's Q-Comp Plan and Oregon's Implementation Options

Adapted from the Milken Teacher Assistance Program (TAP), the Minnesota's Q-Comp plan includes five elements:

1. Career ladders for teachers
2. Job-embedded professional development
3. Instructional observations and standards-based assessments
4. Measures to determine student growth
5. Alternative teacher compensation or performance pay

Instructional observation and objective measures of student growth (elements three and four) are necessary conditions of alternative teacher compensation (element five). Alternative pay systems simply will not work unless teachers are convinced that school managers are objectively and consistently measuring their skills, as well as those of their students. That entails designing an evaluation system that is meaningful, reliable and valid, and providing sufficient resources to staff it. Moreover, participating districts will need to design effective student performance measures that are fair assessments of teacher and school performance. The Q-Comp system appropriately highlights *instructional observations and standards-based assessments*, and *measures to determine student growth* as separate elements to ensure some attention to them in the design and development of the compensation system.

Oregon's policymakers will have to decide how to incorporate Q-Comp's remaining two components: career ladders and job-embedded professional development.

Career ladders are designed to provide excellent teachers with opportunities for career advancement without leaving the classroom. In most systems, teachers must leave the classroom and move into administrative positions in order to advance their careers, thus they provide incentives for the very best teachers to leave the classroom. Career ladders were designed to address this problem by providing rewards, recognition, and leadership roles (typically mentoring, coaching, and curriculum development) for highly skilled classroom teachers. Because these systems pay teachers more and take them out of the classroom for part of the day to perform leadership functions, they tend to be quite expensive and need to be limited in order to ensure that they will not become too expensive to operate. Districts employing career ladders in Q-Comp appear to be using career ladders as a way to identify and compensate teachers to support teacher evaluation and job-embedded professional development in support of the alternative compensation system. In most districts, contractual limitations prevent teachers from evaluating other teachers, so the use of teachers for evaluation activities needs to be approached with an awareness of this constraint.

Job-embedded professional development includes opportunities to pursue knowledge and skill development, data analysis and teaching improvement during the contract day. Professional development is a critical component of alternative compensation systems because alternative compensation is designed to clarify desirable goals and provide an incentive for teachers to work toward them, but it does not tell teachers what specific changes they need to make in their own knowledge, skills and performance to achieve those goals. Carefully aligned and accessible professional development provides the missing piece that creates a clear line of sight between teacher actions and goal achievement. Without it, alternative compensation clarifies desirable ends, but does not provide teachers with the means to get there. It puts pressure on teachers to work harder, but does not illuminate a path for them to grow as skilled professionals to enlarge or refine their teaching practice to become more effective. The QComp program attempts to address this by compensating teacher leaders for working with other teachers to help them improve (the career ladder piece); and by providing for professional development linked to the goals, which is offered during the workday.

In short, the role of the career ladder could potentially be subsumed in the other four elements. Oregon policymakers could advance career ladders as an option, but not a requirement of a district plan.

- Develop an instructional observation and standards-based assessment system to evaluate the development and demonstration of teacher knowledge and skills, with assurances of inter-rater reliability across evaluation team members who are periodically trained in the evaluation system.
- Develop a system for measuring student growth for the alternative compensation system that includes at least two data points to measure performance gains.
- Base at least 60 percent of any compensation *increase* on teacher performance using some combination of:
 1. School-wide student achievement gains or locally selected standardized assessment outcomes
 2. Measures of student achievement
 3. Objective teacher evaluation programs that include:
 - individual teacher evaluations aligned with educational improvement plans and staff development plans
 - objective evaluation using multiple criteria conducted by a locally selected and periodically trained evaluation team that understands teaching and learning.

SET THE SUPPLEMENTAL APPROPRIATION

Successful reforms to compensation systems have recognized that a movement away from the single-salary schedule costs money. At least four reasons underlie the need for additional resources. First, programs can be difficult to design; districts need to invest time and resources into designing meaningful reforms. Second, compensation reform asks teachers to walk away from a system with highly predictable outcomes and accept an alternative with more variation. As with other industrial sectors, employees who take on some additional risk or variation in compensation—holding other factors constant—should be paid more than those who do not. Third, an alternative compensation system that links pay to teacher knowledge and skills should offer more opportunities for professional development and evaluation than one that does not. Finally, aside from direct professional development and evaluation costs, implementing districts will incur administrative costs associated with other aspects of the reform, including updating their data systems to better track student and school performance and complying in statewide rules and regulations.

In spending more on salaries, professional development, and evaluation in the reformed districts, Oregonians would expect that teacher productivity, as measured by student achievement and graduate rates, would rise. Put

differently, Oregonians would be betting that the new system would produce a more talented teacher corps by encouraging existing teachers to sharpen their skills and by attracting even better candidates to the field.

Given the limited experimentation in the area, little data exist to inform policymakers or taxpayers on how much they should be willing to pay for compensation reform. Minnesota’s Q-Comp system offers participating districts \$260 per student, which represents about a 3 percent increase in operational expenses on average. In Denver, voters recently approved a \$25 million annual levy to fund the school district’s ProComp system, which equals roughly 4 percent of operational expenditures.

Drawing on these two examples, Table 1 reports a range of cost estimates for statewide program that would cover a varying percent of participating districts and different per student revenue adjustments. A very small program serving districts with 2 percent of students and providing a 2 percent increase in per-student spending would cost \$2.1 million annually. A relatively large-scale program serving districts with 20 percent of students and providing a 5 percent increase in per-student spending would cost \$51.4 million annually.

Table 1: Estimated Short-Term Annual Cost of an Oregon-Based Teacher Compensation Reform Program Assuming Different Percentages of Students Covered and Levels of Per-Student Supplemental Appropriations, (in Millions based on 2007-08 Enrollment)

		Percent of Oregon Students Enrolled in Participating Districts			
		2%	5%	10%	20%
Percent Increase in Per Student Spending	2%	2.1	5.1	10.3	20.6
	3%	3.1	7.7	15.4	30.8
	4%	4.1	10.3	20.6	41.1
	5%	5.1	12.9	25.7	51.4

Source: ECONorthwest

The experiences in Denver and Minnesota suggest that a per-student spending increase in the 3 to 4 percent range would induce some districts to take up a reform effort. Costs depend, in part, upon the infrastructure and funding streams already in place. Clearly, higher percentage increases would entice more participation, but the state does not want to “overpay” for the teacher productivity gains that the reformed compensation systems would be expected to produce.

In practice, the Legislature may need to start the program at a certain level and, over a course of five to ten years, gauge district interest in the program. Most likely, few districts would join the program in the first couple

of years, but if the experiences of pioneering district are successful, more and more districts would seek alternative compensation models.

ESTABLISH A STABLE FUNDING MECHANISM

An incentive system works only to the degree that the actors in the system—in this case, teachers—believe the system will persist over a reasonable time horizon. Broadly speaking, the incentive value of alternative compensation systems—particularly performance awards—has been weakened significantly because funding disappeared during tight fiscal times.⁹

Under an Oregon model, policymakers should establish a trust fund that would finance alternative compensation systems and earmark revenues to it. Denver’s recently implemented ProComp system is financed through its Compensation Trust Fund. Under the Denver model, property tax proceeds are placed in the fund and governed by a board of directors that includes representatives from DCTA, Denver Public Schools and the community.

Table 3 illustrates a trust financed with 8 percent of total lottery distributions beginning in the 2007-08 fiscal year. Assuming districts with 20 percent of students would participate by 2113-14—and that participating districts would receive a 5 percent per student allocation—the fund’s annual payments to districts would eventually exceed \$60 million. By 2114-2115 the fund’s ending balance would be equal to two-and-a-half times its annual payments—an appropriate level for a trust of this kind.

Table 2: Illustrative Balances in an Alternative Compensation Trust Fund, in Millions of Current Year Dollars

School Year	2007-08	2008-09	2009-10	2010-11	2011-12	2112-13	2113-14	2114-15
Beginning Balance	0.0	42.8	80.5	113.0	138.9	156.9	165.9	164.7
Deposits	41.8	43.5	45.8	47.7	49.7	51.7	53.9	56.1
Payments to Districts	0.0	8.9	18.0	28.0	38.9	50.6	63.2	65.8
Interest Earnings	1.0	3.0	4.7	6.1	7.2	7.9	8.1	8.0
Ending Balance	42.8	80.5	113.0	138.9	156.9	165.9	164.7	163.1

Source: ECONorthwest. Calculations assume trust is funded by 8 percent of total lottery distributions. Beginning in 2008-09, districts with 3 percent of students would participate in the system. Participation would increase linearly until districts with 20 percent of students participate in 2113-14. Trust fund principal would earn 5 percent annual rate of return.

EVALUATE THE REFORM

Lack of evaluation has plagued education reforms. Policymakers invest millions of dollars in an intervention and are left with little or vague evidence about effects on student achievement. Oregon policymakers should make overall program evaluation a priority in teacher compensation reform.

A voluntary system, like the one described above, has advantages and disadvantages from an evaluation perspective. On the positive side, a number of districts will operate with reformed compensation systems while others will not, which creates a quasi-experiment. The state could track and compare student achievement in participating and non-participating districts

over time and—using statistical techniques—attempt to isolate effects of changes attributable to the compensation system.

But voluntary systems also pose significant challenges to evaluators. The fact that some districts and their unions step forward and others do not may speak to fundamental differences between participating and non-participating districts that have nothing to do with the way they pay teachers. For example, participating districts may simply have better district-union relations that benefit student achievement in other ways.

Difficulty in evaluation is not an excuse to forego it, and despite the challenges, a number of viable evaluation options exist. These include:

- **Implementation process evaluations and best practice dissemination.** The Department of Education, with the assistance of national experts, should evaluate individual programs to provide opportunities to adjust program elements as needed to improve effectiveness. The Department should additionally examine the conditions and characteristics of particularly successful programs and provide opportunities for sharing of information across programs to enable districts to learn from one another. While each district is a unique situation, critical opportunities for moving up the learning curve in effective program design and implementation will exist.

During on-site reviews, program evaluators should examine the relationship between evaluation scores and student achievement outcomes to ensure that the rewards for demonstration of critical knowledge and skills go to the teachers who are producing the most achievement gains for students. Put differently, the new system should ensure that the feedback provided to teachers is accurately assessing effective teaching practice. The Consortium for Policy Research in Education (CPRE) has conducted studies of this kind in three sites committed to developing effective evaluation systems which provide meaningful feedback to teachers (Cincinnati, Reno, and the Vaughn New Century Learning Center in Los Angeles). The research shows that in these sites, students in the classrooms of teachers who received higher evaluation scores had greater learning gains than students in classrooms of teachers receiving lower evaluation scores. This kind of evidence helps to validate the system for policymakers, educators, and the public, and provides important formative feedback to districts on the design and implementation of their knowledge and skills-based pay systems.

- **Pre-post analysis of student achievement in participating and non-participating districts.** Proponents of teacher compensation reform argue that over time, an alternative compensation system would provide incentives for teachers to acquire skills more directly in line with district goals, and

through performance awards, would inspire teachers to search harder for innovations that boost overall achievement. If their hypothesis is correct then over five to ten years, one would expect to see an acceleration in achievement in the districts that have adopted the reforms—holding other factors constant. Evaluators could pool school level (or student-level) achievement data for periods before and after implementation of the reform. Data would capture a range of factors hypothesized to affect achievement, including class size, instructional spending per student, family income, gender, race/ethnicity, special education status, English-speaking ability, and the like. In addition, evaluators would record details about teacher compensation in the student’s school (e.g., single-salary, knowledge/skill based pay, performance awards) and how long the compensation system had been in place. Over time, if statistical analyses demonstrated a positive relationship between the method of teacher compensation and achievement—holding constant other measurable determinants of achievement—policymakers would have evidence that the reform worked, as well as the degree to which it worked.

- **Analysis of teacher supply, turnover and job satisfaction.** While the ultimate goal of compensation reform would be improvements in student achievement, policymakers should also evaluate intermediate measures of program success—specifically teacher supply, job turnover and satisfaction. The Oregon Quality Assurance in Teaching Project estimates high turnover in early years with Oregon teachers leaving the profession at a rate of 10 percent after the first year, 21 percent after two years, 33 percent after four years and 37 percent after five years.¹⁰ State evaluators should track these turnover rates in participating and non-participating districts overtime. If reformed compensation systems prove popular with teachers, policymakers should expect to find that participating districts are relatively attractive employers with lower teacher turnover rates. In addition to these trends, comparative surveys of teachers on overall job and pay satisfaction would be informative.

PERFORMANCE-RELATED COMPENSATION MODELS AVAILABLE TO OREGON SCHOOL DISTRICTS

As discussed previously, Oregon school districts could draw on one or more alternative compensation systems to replace the single-salary method:

- Knowledge- and Skills-Based Pay (KSBP)
- Performance Awards
- Market Incentives for Hard-to-Staff Positions

In the remainder of this section, we review the typical frameworks and award levels in each of the three systems.

KNOWLEDGE AND SKILLS BASED PAY (KSBP)¹¹

KSBP systems assume that school managers who can identify certain teaching skills, behaviors, or levels of certification that are correlated with higher student achievement can improve the quality of their teaching staff by paying more for those skills, behaviors, and levels of certification. Researchers have made some progress in this area; for example, Darling-Hammond (1999) found that levels of teacher preparation and certification status correlate strongly with achievement even controlling for poverty and language status¹². Goldhaber and Anthony (2004) discovered that teachers certified through the National Board for Professional Teaching Standards were more effective in improving student achievement in math and reading, particularly for younger students and students in poverty¹³. Other studies (Wright, Horn & Sanders, 1997; Archer, 1999) have found that teachers are the most important factor in a student's achievement, regardless of other student characteristics—for example, race/ethnicity and socio-economic status—that we typically view as significant determinants of performance¹⁴.

KSBP FRAMEWORK

While these systems take many forms, KSBP systems typically provide bonuses and salary increases based on demonstrated skills in one or more of the following four areas, with the first being the most critical:

- **Expertise in content, curriculum, and instruction.** KSBP systems assess teachers' knowledge and skills through rigorous, standards-based teacher evaluation systems, and through professional certification by the National Board. Evaluations also assess teacher knowledge and skills in areas deemed critical to the learning needs of the student population of the particular school or district, such as being able to speak specific languages, specialized training in reading instruction, or the ability to teach advanced mathematics or science.
- **Curriculum development, guidance counseling, student advising, and parental outreach.** In addition to their work with students in the classroom, teachers demonstrate leadership by helping to articulate curriculum with state and district learning goals within and across grade levels. Other critical work includes counseling and advising of students, and working with parents to leverage their help in advancing student learning.
- **Site-based management.** Teachers demonstrate formal leadership such as an ability to run meetings, plan strategically, manage and evaluate programs.
- **Involvement in professional communities and activities.** Teachers demonstrate informal leadership in mentorship and

collaboration with other teachers to support the success of their department, grade level, or team.

KSBP ASSESSMENT METHODS

The assessment method—the technique that governs who receives additional compensation and when—has traditionally been a point of contention among teachers. Historical reforms largely failed because teachers considered the assessment systems arbitrary and untrustworthy. In an ideal KSBP system, evaluators assess teachers on demonstrated performance—as opposed to credits and degrees—and consider classroom observations and portfolios. Assessments developed external to the school system—INTASC/PRAXIS III, Danielson’s Framework for Teaching, or the National Board of Professional Teaching Standards—are generally considered to be the most valid and reliable, and internal input can be used to modify the assessments based on local conditions and priorities. Nonetheless, the assessments should be continually and carefully evaluated for validity and reliability—are they measuring the right things and do they do so consistently over time and across teachers? Evaluators should be trained and retrained over time to ensure even and accurate implementation of the evaluation system.

KSBP PAY UPGRADES

Pay upgrades under a KSBP program require considerable effort on the part of teachers. Experts therefore recommend that awards be large enough to attract teachers’ attention and to be perceived as commensurate with the effort required. Researchers from the Consortium for Policy Research in Education (CPRE) recently reviewed seven functioning KSBP systems and concluded that only three offered sufficient awards. The systems determine the size of bonuses based on the percentage of base salary in the existing schedule that a new teacher could eventually earn.

Researchers report KSBP programs are generally less attractive to senior teachers. For long-tenured staff, the additional salary or feared drop in salary does not appear to be worth the effort of program participation. Consequently, six of the seven sites CPRE studied kept a seniority-based element in their salary schedule; however, some districts capped the experience-based pay progression at a lower number of years (that is, they reduced the number of steps in their wage scale). Finally, many sites allowed senior teachers to opt-out of the KSBP system but made participation mandatory for new teachers.

KSBP programs offer a number of options. For example, a district can replace, supplement, or modify the traditional teacher pay schedule. Of the three KSBP programs with substantial rewards, only one, Cincinnati, proposed to completely replace its previous pay schedule. However, all districts did not change the financial reward for having a Master’s degree in Education.

Cost data on KSBP systems are limited. In theory, a district could design a revised salary structure with no net increase in salaries. Indeed, districts could make significant progress by simply focusing teachers on developing relevant skills, narrowing the scope of allowable degrees, and focusing teachers to select professional development opportunities that enhance critically important skills. On balance, costs have accompanied implementation of KSBP programs. In addition to salary costs, districts incur an administrative cost associated with teacher assessments. In Cincinnati, for example, the district hired eight full-time teachers who were subject area specialists to perform classroom observations at an annual cost of \$500,000. Cincinnati chose to invest in these new evaluators to enhance the validity and reliability of the evaluation scores and feedback to teachers regarding their performance.

PERFORMANCE AWARDS

Performance award systems reward teachers based on changes in “outputs” (i.e., student achievement) rather than “inputs” (i.e., the teacher’s demonstrated skills). Districts considering performance awards first have to determine the *level* at which student achievement would be measured—the individual teacher, groups of teachers, or the school level. Systems that have attempted to base awards solely on individual teacher level performance have run into a host of challenges. Opponents to linking pay primarily to individual teacher assessments argue too many determinants of achievement fall outside the teacher’s ability to control, and given relatively small class sizes (e.g., 15 to 25), poor performance by one or two students could adversely affect a teacher’s compensation. Moreover, opponents argue that individual awards could create undesirable incentives for competition between teachers when research has shown that the most effective schools have strong *collaborative* cultures among teachers.¹⁵ Further, over time, individual performance pay plans have resulted in negative effects on teacher morale, and those that survived tended to be in affluent districts with high teacher performance where most teachers received the bonus award.¹⁶

School Based Performance Awards (SBPA), which award bonuses at the school-level, have proven more practical to implement. SBPA supporters argue that school-level awards for teachers foster collaboration and dissemination of best practices. SBPA systems measure student performance, achievement, and participation (e.g. attendance or dropout rates), and reward schools that exceed performance targets or show substantial improvement. These systems give local schools discretion in spending their awards including pay bonuses to teachers and staff; others fund school-wide initiatives.

Distributing bonuses to individual teachers and staff—rather than to school-wide initiatives—is emerging as a promising practice. In Kentucky, where teachers could decide how to spend the bonus money, including for pay to teachers and staff members, teachers were very aware of the bonuses and opportunities to receive them. In Maryland, where the bonuses went to school-wide initiatives, most teachers in a sample of 11 schools were unaware

of the program. In these schools, because the principal was primarily responsible for allocation of school budgets, the focus of the school-wide initiative bonus served as an incentive for principal leadership behavior rather than for teacher behavior¹⁷.

SBPA FRAMEWORKS

Performance criteria and a method for calculating changes in performance are key to an SBPA program¹⁸. States and local districts employing SBPA programs use state and locally designed student assessments. Most districts emphasize standard achievement measures; however, some assign a weight (usually 20 percent or less) to participation factors like attendance or dropout rates. Calculations of improvement or decline in test scores can be quite complex, but are often used to enhance fairness across varying classroom contexts. States and local districts employ one or more of the following three approaches:

- **Comparison to standard.** This method measures the share of students who meet a predetermined, fixed level of performance. The approach, in its most basic form, does not account for differences in the socio-economic backgrounds of the student population.
- **Improvement to standard.** School officials typically view this improvement-based method as fairer than an absolute standard because the approach provides an achievable goal for historically low performing schools. Under this approach, low performing schools may have to move student scores further, but may have more room for improvement than consistently high performing schools which have less room for improvement overall.
- **Value-added.** Through this method, administrators use a given year's score to predict the "expected" score for the following year. They then compare actual scores in the second year to the predicted or expected scores and distribute awards based on the degree to which a school exceeded expectations. Administrators working in schools with historically low student achievement favor the system because it rewards the value added to the struggling population even when most students fail to meet established standards. The method requires relatively frequent testing to gauge value added and uses complex statistical techniques to predict performance.

Comparison to standard models require the least data capabilities because they simply compare school results in a given year to the established standard. Improvement to standard systems require more substantial analytic capabilities such as the ability to calculate changes in overall student performance over time compared to a standard, potentially including analysis of the performance of subgroups of students in any one grade level. Value added systems follow the performance of individual students over time. This approach requires sophisticated individual data tracking systems. Therefore, it is more complex administratively but can be perceived as more equitable as it controls for changes in student population from year to year.

Districts can further mitigate some of the issues related to volatility of student performance by averaging growth over more than one year of performance (e.g., comparing the performance in one biennium to the next).

Student mobility poses challenges to all three of these systems because highly mobile students are the “products” of multiple schools and, possibly, multiple districts. Mobile students may be left out of calculations of performance improvement, but effective designs make an effort to address these students to make sure that their success remains a priority focus under an incentive system.

These methods can be used alone or can be combined in a hybrid model. For instance, some districts combine the comparison to standard and improvement to standard methods and award a school for either the share of students meeting a standard or a demonstrated improvement in that share.

SBPA ACHIEVEMENT TARGETS

Supervising agencies use a variety of methods to develop achievement targets. Targets must be seen as obtainable but also high enough to allow for noticeable improvement. The reasoning behind an established achievement level often includes historic achievement trends, possibly political or external considerations, and resources available to support the efforts to improve student achievement. A timeframe for achievement needs to be set—often according to a strategic plan, long-term time frame, or even year-to-year—so that a “floating” target can reflect an expectation that high performance needs to be maintained.

Different targets can also be set for different groups of students to ensure a focus on them. To illustrate, programs could set specific targets for the achievement growth of the lowest performing students or for targeted minority groups. For example, Charlotte, North Carolina set higher targets for African-American students because the achievement gap between them and other students was so large, and administrators believed a lower target would suggest a lack of commitment to closing the achievement gap.

SBPA AWARD RECIPIENTS AND LEVELS

Awards can be directed to teachers, teachers and selected staff, or to the school. In some cases, school officials have allowed staff to influence the uses of the award on year-to-year basis. North Carolina uses this sort of hybrid approach and shares the award with certified staff.

As with KSBP systems, awards must be sufficiently large to motivate school personnel. Based on reviews of similarly structured private sector programs, SBPA designers recommend the awards should carry an average *after tax* value of \$2000 and should run no lower than \$1,000.

Historically, SBPA programs have struggled to maintain year-to-year funding. Well-designed state level SBPA programs establish a trust fund that

secure stable funding for some number of years to ensure the program's on-going incentive effect. This is critical in order for the program to have motivational impact on staff. Teachers must believe that the awards will actually be paid to be motivated to work to achieve them.

To estimate the program's anticipated total cost, administrators can review historical performance of schools and estimate how quickly individual schools can and will respond to the performance incentives. If the schools outperform expectations, SBPA designers recommend increasing the total award pool—as opposed to reducing individual awards—to maintain a fixed pool amount.

MARKET INCENTIVES

A number of districts have incorporated incentives into their pay structures that provide higher pay for hard-to-staff positions. Districts taking this approach do so with one or both of the following goals in mind:

- Attract teachers in hard-to-staff subject areas, particularly mathematics, science, and in some areas special education and teachers trained to teach students whose first language is not English.
- Encourage teachers to accept positions in hard-to-staff schools, such as inner city schools or schools located in disadvantaged rural areas.

The philosophy underlying this aspect of compensation is relatively simple: current and future teachers face a market of employment options. Individuals gifted in math, science, and technology have a number of meaningful employment options. Among these, teaching is likely to be a lower paid option. Thus, to attract and retain teachers who have very marketable skills, pay levels above those for the average teacher may be necessary. In addition, some teaching skills and certification areas, such as special education and English as a Second Language are often characterized by insufficient numbers of teachers trained to teach these high demand and growing subject areas. Thus, additional pay may be needed to attract teachers to districts needing these skill areas, and to encourage more individuals to seek training or dual certification in these areas. And finally, some schools and districts face economic or other circumstances that make them particularly challenging places to work. In an era of high stakes accountability, the best teachers (those with significant options available to them) may choose to work in less challenging circumstances. Market based pay can compensate for the more challenging circumstances facing teachers in some schools (e.g., limited resources, crime/safety concerns, a history of low achievement, high mobility, or limited economic or social opportunities). Market pay may also compensate for a higher cost of living facing teachers in urban areas.

Market incentives provide a logical approach to enhancing the attractiveness of teaching, or of teaching in hard-to-serve schools or districts.

The research evidence suggests that teachers are responsive to market incentives; teachers employed in lower paying districts are more likely to quit or transfer, particularly if there are financially advantageous alternatives in the area.

Loeb et al. (2005) report on a number of studies that have examined the relationship between teacher pay and teacher turnover. They find that both teacher pay and working conditions affect teacher decisions to stay or leave hard-to-serve schools. Other studies have found that: a \$1000 increase in each step of the salary schedule would increase teachers' average duration in the district by 2 to 3 years, with particular impact on teachers in high-demand fields like math and science; and that a 10% salary increase would reduce the probability of teachers leaving in the first several years of teaching by 1 to 2%, with the effects of salary differentials having a higher impact in the early years of teaching. These relatively large increases in pay for relatively limited returns have led some researchers to conclude that increasing overall levels of pay to improve teacher retention may be an inefficient (expensive and untargeted) policy strategy.¹⁹

Research on teacher mobility also clearly shows that teachers make mobility decisions in order to leave challenging work environments in favor of more attractive working conditions. Enhancing schools as attractive and supportive places to work and attending to the efficiency of hiring practices appear to be an important complementary strategy to market-based pay in addressing teacher shortages.

A number of states have pursued market incentives to attract teachers to high-need areas. A recent report from the Education Commission of the States found that 31 states have created financial incentives to address subject-area shortages, and 17 states provide incentives to attract teachers to hard-to-staff schools. Fourteen states (including Oregon) have policies to address both kinds of shortages. The most common form of benefits involves college scholarships or deferred college loan payments in exchange for teaching in a shortage area. Other states provide housing benefits, salary increases, and yearly bonuses.²⁰ Finally, a number of states have implemented signing bonuses for teachers. Research on these programs suggests that signing bonuses are effective in attracting teachers, but have limited impact on retaining teachers in hard-to-staff schools.²¹

Oregon districts interested in pressing ahead with this concept should follow closely Denver's ProComp experience, which provides pay increments to teachers in "hard-to-serve schools" or "hard-to-staff assignments". Denver defines the categories as follows:²²

- **Hard-to-Serve Schools** – Schools with a high percentage of students on free and reduced lunch. Teachers who work in a hard-to-serve school will receive a market incentive bonus of 3 percent of the index every year the school is eligible. Specialists who work in multiple schools will receive prorated bonuses if

they work in a hard-to-serve school. DPS and DCTA will annually review the list of hard to serve schools.

- **Hard-to-Staff Assignments** – Teacher assignments where the supply of licensed professionals is low and the rate of turnover among licensed professionals is high. Examples of hard-to-staff assignments are special education center assignments. Teachers who work in hard-to-staff assignments will receive a bonus of 3 percent of index. Specialists who work in hard to staff assignments will receive prorated bonuses if they work in multiple schools.

Denver’s approach will shed light on whether a permanent wage adjustment, equal to roughly \$1,000 annually, is a sufficient incentive to positively alter staffing patterns.

CONCLUSIONS AND DESIGN IMPLICATIONS

The current compensation system rewards course taking and longevity, but it has not provided meaningful incentives to develop high performance cultures in schools. Alternative compensation systems are designed to leverage the largest single expenditure for public schools—teacher compensation—to foster and reward exceptional teacher performance.

Alternative compensation in Oregon could provide an important opportunity for districts to use compensation reform to foster professional growth among teachers, reward teachers for working to use this enhanced capacity to continuously improve instructional approaches and thereby raise student achievement, and provide targeted market incentives to attract teachers to hard-staff subjects, or hard-to-staff schools.

The experience of districts and states that have already designed and/or implemented alternative pay systems suggests critical lessons that could help to shape compensation reform in Oregon.²³

1. **Successful restructuring of teacher compensation requires significant cultural shifts for schools and districts.** First, many teachers believe that their education and training have been sufficient to support and sustain their teaching practice. Alternative compensation challenges this belief, by helping teachers to set new goals for their own learning.

Second, many veteran teachers (in particular) have experienced only limited or inconsequential evaluations in the past, with limited observation, and a relatively low bar for meeting performance expectations. Knowledge and skills-based teacher evaluation systems linked to pay require significant observation and interaction with all teachers, clear distinctions among performance levels, critical feedback for performance improvement, and they are high stakes (i.e., linked to pay). This cultural shift can be wrenching, as it calls into

question individual teachers' long-held beliefs about their own knowledge, skills and performance. Teachers need time and encouragement to adjust to the shifting expectations and performance feedback associated with new rigorous standards-based evaluation and compensation.

Third, a common feature of schools is a culture of equality. Alternative compensation systems challenge this culture by differentiating pay, performance, and market incentives to attract and retain teachers. These cultural shifts need to be addressed through ongoing coaching, encouragement and support for teachers as they transition into high performance cultures.

- 2. Successful restructuring of teacher compensation requires structural shifts for schools and districts.** In many districts, teacher evaluation, teacher compensation, teacher recruitment and induction, teacher professional development, and curriculum and instruction are largely separate and unrelated systems. For alternative compensation to succeed in fostering improvements in student performance, these critical elements of the human resource management system need to be aligned so that they are mutually reinforcing goals of teacher learning and high performance in pursuit of improved student learning.

In addition, the role of the principal may need to be redefined to provide principals with the time they need to be instructional leaders and oversee or carry out meaningful teacher evaluation in support of the alternative compensation plan. In many cases, this enhanced instructional leadership role may affect the knowledge and skills needed for the principalship, which has implications for the preparation, selection, induction, and professional development and support of principals and others who will serve as evaluators and/or instructional leaders in schools and districts.

- 3. Designing incentive structures that are fair, valid, and appropriate is very challenging.** One way to enhance the probability of successful design and implementation of alternative compensation is to build on the experience of others. Districts should be encouraged to adapt externally developed systems and standards to local conditions, rather than trying to reinvent them. Systems should be designed with all parties at the table. And still, despite the best efforts of design teams, it is very hard to get the details right the first time. State support for planning grants that support exploration and design development, opportunities for participating districts to meet with one another to share their experiences with alternative compensation, and support for formative feedback, particularly from teachers, is critical to enabling districts to revise program elements as needed to achieve desired goals.

Despite the challenges, alternative compensation provides an important opportunity to help to shape schools into high performance organizations. In recent years, educational research has provided important advances in knowledge about teaching and learning, including new evidence about the critical role that highly skilled teachers play in advancing student learning. Alternative compensation—knowledge and skills-based pay, performance pay, and market incentives—all provide important vehicles for creating organizational environments that attract, retain, and support teachers in developing the knowledge and skills they need and in creating systems that reward teachers for investing their time and effort to achieve specific targets toward advancing learning for all students.

DOUGLAS COUNTY, COLORADO

Douglas County operates one of the longest, continuously running performance pay systems in the country. The system consists of two parts. All teachers participate in the base pay system. Teachers voluntarily participate in the incentive pay system, which does not put their base pay at risk. Each system is described briefly below:

- **Base pay.** The district bases a teachers' base pay on their number of successful evaluation credits and the level of education the teacher has attained in addition to their professional base pay. The district does not automatically increase teacher pay based on number of years of service. In order for pay to increase, the teacher must receive a satisfactory evaluation, which is based on summative and formative assessments. An unsatisfactory performance appraisal freezes salary for a year and precludes the teacher from participating the incentive pay system.
- **Incentive pay.** The district awards incentive pay in one of six categories:
 1. *Outstanding teacher:* The district rewards a bonus of \$1,250. Teachers can demonstrate outstanding performance through a portfolio consisting of relevant career and teaching information (Type A); a portfolio demonstrating the teacher's effort to develop a standards-based classroom (Type B); an application to pursue certification through the NBPTS (Type C); or by demonstrating outstanding student growth (Type D).
 2. *National Board Certification.* Teachers with current NBPTS certification earn a \$2,500 bonus for a maximum five-year period.
 3. *Group Incentive Program.* Teachers and staff collaborate to develop cooperative plans with a goal of improving student achievement. Groups submit the plan to a Group Incentive Board (GIB) for approval. If the GIB ultimately deems the plan successful in improving performance, the district pays bonuses of \$400-\$500 per group member.
 4. *Skill Blocks.* The district awards teachers \$250-\$500 for acquiring—and demonstrating the application of—skills deemed critical to the district's mission.

5. *Master Teacher*. The district awards \$2,500 annually—over a five-year period—to teachers who demonstrate outstanding student growth and show leadership in their teaching field.
6. *Responsibility Pay*. The district provides additional pay to teachers who accept additional job duties (e.g., membership in district committees).

CINCINNATI, OHIO

Cincinnati developed a comprehensive knowledge and skills-based teacher pay system collaboratively with union and management leadership, but the plan was not ratified by the teachers, and has not been implemented. The district has, however, developed a sophisticated evaluation system designed to be used to determine base pay for teachers. The union continues to work with the district to link pay to this evaluation system. As with Douglas County, the model developed in Cincinnati consists of base and incentive pay.

- **Base pay**. In the Cincinnati plan, base pay would range from \$30,000 to \$62,500, with opportunities to increase base pay through additional responsibilities, and the acquisition and demonstration of knowledge and skills. The district would assign teachers to one of five statuses, which would determine the base-pay level:
 1. *Apprentice*. First-year teachers and second-year teachers with subpar evaluations.
 2. *Novice*. First- and second-year teachers who complete “novice” courses that demonstrate classroom management, standard-based teaching philosophy, cooperative learning practices, and the like.
 3. *Career*. Teachers who earn satisfactory scores on professional assessment are moved to a career category where they can remain. Teachers can receive automatic salary increases but must continue to demonstrate appropriate knowledge and skills to remain in the category.
 4. *Advanced*. Teachers who obtain NBPTS certification or who demonstrate superior knowledge and skills in two areas of the district’s assessments.
 5. *Accomplished*. Teachers who demonstrate superior knowledge and skills in each of the areas of the district’s assessment.

- **Incentive pay.** Cincinnati teachers receive incentive pay in one of three ways: 1) obtaining a Master’s degree in one of several district-specified disciplines (e.g., early education, mathematics, English, social studies); 2) receiving a “skill block” in a district-specified area including technology, comprehensive school reform models, team skills; 3) accepting additional responsibility as a lead or consulting teacher—available to only advanced or accomplished teachers.

DENVER COUNTY, COLORADO

The Denver Public Schools and the Denver Classroom Teachers Association recently agreed to a comprehensive overhaul of the District’s compensation system. Implementation of the proposed system was assured with voter approval of a \$25 million annual property tax increase in November 2005. The revenues support a trust fund that finances the program’s ongoing operations.

The new system consists of the four major components and nine individual elements summarized in Table A-1.

Table A-1: Components and Elements of Denver’s ProComp System

Knowledge and Skills	
	Professional Development Unit
	Graduate Degree/National Certificate
	Tuition Reimbursement
Professional Evaluation	
	Satisfactory Performance
	Unsatisfactory Performance
Market Incentives	
	Hard to Staff Position
	Hard to Serve School
Student Growth	
	Annual Objectives
	Colorado Student Assessment (CSAP)
	Distinguished School

Source: www.denverteachercompensation.org

Through the knowledge and skill component, teachers would receive (2 percent) salary increases for documented completion of professional development units and a 9 percent increase for the acquisition of graduate degrees or national teaching certificates. In addition, the district would establish a one-time \$1,000 account for tuition reimbursement for each teacher in the district.

Under the professional evaluation component, the district would continue its periodic review of teaching performance. A teacher routinely considered “satisfactory” would receive a 3 percent salary increase once every three years. “Unsatisfactory” assessments would delay salary increases.

Through so-called market incentives, teachers would receive bonuses for teaching in hard-to-serve schools or hard-to-staff positions. Unlike the salary increases described above, the *bonuses* would not be considered part of a teacher's salary for the purpose of calculating a pension.

Finally, through the student growth component, teachers' annual salaries would be increased—a 1 percent increase plus a 1 percent bonus—for having met annual student-based objectives developed in collaboration with the principal and demonstrating sustained improvement in their student's CSAP scores (worth a 3 percent salary increase). Moreover, drawing from the SBPA concept, teachers would receive a 2 percent bonus if they taught in a district-recognized "Distinguished School".

The *ProComp* system is voluntary for existing teachers and mandatory for new hires. The existing salary system would remain in place until the last current employee retires, terminates employment with the district, or switches to the *ProComp* system.

OREGON SCHOOL DISTRICTS

In Oregon, the Sweet Home, Gresham-Barlow, Eagle Point, and Central Linn school districts have adopted features of the KSPB compensation system and link salaries and bonuses to NBPTS certification and the willingness to work in hard-to-serve positions.

- **Sweet Home.** The District's union contract specifies a one-time \$10,000 bonus for NBPTS certification. Since its inception, one teacher has received the certification, two are working on it, and two have dropped out of the program. When someone does receive the certification, the Ford Family Foundation provides a \$2500 bonus to a school project important to the teacher. This district has other incentives for working in a hard-to-serve school or with special education students. The school district either forgives or reduces a teacher's school loans for working in a hard-to-serve area and provides an annual stipend of up to \$3,000 for working with special education students. The district is considering bonuses for speech and language therapists.²⁴
- **Gresham Barlow.** The District links NBPTS certification to movement along the existing step-based salary schedule. Teachers were initially opposed the program but later cooperated. The district provides mentors to assist teachers working toward the certification. More than 20 teachers have obtained certification in the district.²⁵
- **Eagle Point.** The District's program originally provided a \$1,450 salary increase, which is more generous than the typical \$10,000 one-time bonus award for such certification. Because of cost considerations, the district lowered the award to a one-time \$1,000

stipend. Since the program's inception, about 10 district teachers have obtained certification.²⁶

- **Central Linn.** The District links salaries to NBPTS certification as well as ability to teach in subject areas with a shortage of applicants.

¹ See for example:

Ballou, D. & Podgursky, M. (1997). *Teacher Pay and Teacher Quality*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Hanushek, E. (1986). The Economics of Schooling: Production and Efficiency in Public Schools. *Journal of Economic Literature*, 24(3): 1141-1177.

Rivkin, S.G., Hanushek, E.A. & Kain, J.A. (2005). Teachers, Schools, and Academic Achievement. *Econometrica*, 73(2), 417-458.

² See for example:

Goldhaber, D.D. & Dominic J.B. (1998). When should we reward degrees for teachers? *Phi Delta Kappan*, 80(2), 134+.

Rice, J.K. (2003, August). *Teacher Quality: Understanding the Effectiveness of Teacher Attributes*. Economic Policy Institute, Washington DC.

³ Odden, A. & Kelley, C. (2002). *Paying Teachers for What They Know and Do: New and Smarter Compensation Strategies to Improve Schools*. Corwin Press, Thousand Oaks, California.

⁴ Odden & Kelley (2002).

⁵ Azordegan, J. et al. (2005, December). *ECS Issue Paper: Diversifying Teacher Compensation*. Education Commission of the States. Denver CO.

⁶ Azordegan. 2005.

⁷ The Minnesota Program was designed around the components outlined in the Milken Family Foundation's Teacher Assessment Program (<http://www.tapschools.org>).

⁸ Beer, M. & Cannon, M.D. (2004). Promise and Peril in Implementing Pay-for-Performance. *Human Resource Management, Spring, 2004*, 43(1), 3-48.

⁹ Odden & Kelley, 2002.

¹⁰ Ibid.

¹¹ This section is heavily drawn from Milanowski, A. (2002). *The Varieties of Knowledge and Skills-Based Pay Design: A Comparison of Seven New Pay Systems for K-12 Teachers*. Consortium for Policy Research in Education. Madison, Wisconsin.

¹² Darling-Hammond, Linda. December 1999. *Teacher Quality and Student Achievement: A Review of State Policy Evidence*. Center for the Study of Teaching and Policy. University of Washington. Seattle, WA.

¹³ Goldhaber, D. and Anthony, E. (2004). *Can Teacher Quality be Effectively Assessed?* University of Washington.

¹⁴ See Wright, S.P., Horn, S.P. & Sanders, W.L. (1997). Teacher and classroom context effects on student achievement: Implications for teacher evaluation. *Journal of Personnel Evaluation in Education*, 11, 57-67 and Archer, J. (1999, May 5). Sanders 101. *Education Week*, 18(34), 26-28.

¹⁵ For findings related to competition in merit pay plans, see for example, Murnane, R.J. & Cohen, D.K. (1986). Merit pay and the evaluation problem: Why most merit pay plans fail and a few survive. *Harvard Educational Review*, 56, 1-17.

For research on teacher collaboration, see for example, Rosenholtz, S.J. (1991). *Teachers' Workplace: The Social Organization of Schools*. New York: Teachers College Press.

For research on the relationship between teacher knowledge and skills and student performance, see:

Darling-Hammond, L. (2000). Reforming teacher preparation and licensing: Debating the Evidence. *Teachers College Record*, 102(1), 28-56.

¹⁶ Hatry, H.P., Greiner, J.M., & Ashford, B.G. (1994). *Issues and case studies in teacher incentive plans (second edition)*. Washington, D.C.: Urban Institute Press.

¹⁷ Kelley, C. Conley, S. & Kimball, S. (2000). Payment for Results: Effects of the Kentucky and Maryland Group-Based Performance Award Programs. *Peabody Journal of Education*, 75(4), 159-199.)

¹⁸ This section is very heavily drawn from Odden, A.; E. Kellor; H. Heneman; and A. Milanowski. (1999). *School-based Performance Award Programs: Design and Administration Issues Synthesized from Eight Programs*. Consortium for Policy Research in Education. Madison, Wisconsin.

¹⁹ Loeb, S., Darling-Hammond, L. & Luczak, J. (2005). How teaching conditions predict teacher turnover in California schools. *Peabody Journal of Education*, 80(3), 44-70.

Ballou, D. & M. Podgursky. (1997). *Teacher Pay and Teacher Quality*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

²⁰ Johnson, J. (2005, May). State Financial Incentive Policies for Recruiting and Retaining Effective New Teachers in Hard-to-Staff Schools. Education Commission of the States. Retrieved February 4, 2006 from <http://www.ecs.org/clearinghouse/61/61/6161.htm>.

²¹ For examples of research related to market incentives, see:

Liu, E., Johnson, S.M., & Peske, H.G. (2004). New Teachers and the Massachusetts Signing Bonus: The Limits of Inducements. *Educational Evaluation and Policy Analysis*, 26(3), 217-236.

Humphrey, D.C., Koppich, J.E. & Hough, H.J. (2005). Sharing the Wealth: National Board Certified Teachers and the Students who need them most. *Education Policy Analysis Archives*, 13(18). Retrieved January 28, 2006 from <http://epaa.asu.edu/epaa/v13n18/>.

Ballou, D. & Podgursky, M. (1997). *Teacher Pay and Teacher Quality*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

²² Definitions drawn from Denver ProComp website accessed on February 2, 2006.
[http://denverprocomp.org/stories/storyReader\\$34](http://denverprocomp.org/stories/storyReader$34).

²³ Adapted from Odden, A., Kelley, C., Heneman, H. & Milanowski, A. (2001). *Enhancing Teacher Quality Through Knowledge- and Skills-Based Pay*. Policy Brief RB-34 (November, 2001). Madison, WI: Consortium for Policy Research in Education.

²⁴ Horton, L. (2004). *Sweet-Home School District*. Personal communication.

²⁵ Lewis, S. (2004). *Gresham-Barlow School District*. Personal communication.

²⁶ Feusahrens, B. (2004). *Eagle Point School District*. Personal communication.