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In Focus…

Georgia's Compensation Model: A Step in the Right Direction

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In the 2006-2007 school year, Georgia colleges and universities produced almost 2,000 early childhood teachers, while only graduating 140 mathematics teachers. The shortage of mathematics teachers in the state of Georgia is better understood when one realizes that of the 9,000 mathematics teachers in the state, 14.3% are not fully certified, and the average two-year attrition of mathematics teachers is approximately 773, or 9%. The most recent figures show that after three years the retention rate for all of Georgia teachers is 73.0%, after five years 62.1%, and after eight years the retention rate is 51.3% (Henson, 2008). Obviously, there is a problem with the recruitment and retention of highly qualified mathematics teachers in Georgia.

The state of Georgia has recognized the drastic need to recruit and produce highly qualified mathematics teachers. In response to this need, on April 22, 2009, Georgia's Governor Sonny Perdue signed House Bill 280 as an amendment to the "Quality Basic Education Act." House Bill 280 attempts to address the shortage of fully certified secondary mathematics and science teachers by offering additional compensation to aide recruitment. Georgia House Bill 280 (2009) states:

> …a secondary school teacher in a local school system who is or becomes certified in mathematics or science by the Professional Standards Commission shall be moved to the salary step on the state salary schedule that is applicable to six years of creditable service, unless he or she is already on or above such salary step. From such salary step, the teacher shall be attributed one additional year of creditable service on the salary schedule each year for five years.

Once teachers complete five years of service, they "may continue to be attributed one additional year of creditable service on the salary schedule" if they satisfy or surpass the requirements of the "achievement criteria" to be determined by Office of Student Achievement (Ga H.R. 280, 2009). After five years if the teacher fails to meet the expectations of the "achievement criteria," the bill then requires that "such teacher shall be moved to the salary step applicable to the actual number of years of creditable service which the teacher has accumulated."

The bill also provides incentives for elementary teachers to earn endorsements in mathematics or science:

> …a kindergarten or elementary school teacher in a local school system who receives an endorsement in mathematics, science, or both from the Professional Standards Commission shall receive a stipend of $1,000.00 per endorsement for each year each such endorsement is in effect, up to a maximum of five years. (Ga H.R. 280, 2009)

Elementary teachers with the qualifying endorsements will continue to receive the stipend after the five-year period if they satisfy the "achievement criteria" established by the Office of Student Achievement. An additional stipulation is a guarantee that the stipend will be revoked any time after the five-year period if the teacher fails to meet the criteria for achievement.

Moses and Cobb (2001) state that student achievement in mathematics is a vital component for a student's success in their future endeavors. Research has identified that the quality of a teacher is the single most important school related factor that influences a student's achievement (Sanders & Rivekin, 1996). Therefore, in order to provide the best possible mathematics education for all students, the recruitment and retention of highly effective mathematics teachers is imperative. While House Bill 280 may provide some methods for the recruitment of highly qualified mathematics teachers by providing additional compensation, the question of how to retain such highly qualified teachers is still left unanswered. Exploring the evolution of the teacher pay models as well as endeavors in alternative forms of compensation inform our discussion of House Bill 280. This understanding will provide a perspective in a critical evaluation of the bill and corresponding recommendations.

The evolution of teacher compensation models in the United States is directly linked to the organizational needs of educating large numbers of students as well as the economic and societal trends driven by industrialization. These models are categorized into three distinct shifts: boarding round, position-based salary, and single-salary schedule (Protsik, 1995). The investigation of how teacher compensation has changed over time provides an argument that any type of compensation reform will result from societal and economic alterations.

The first phase, referred to as the "boarding round," typifies the barter-economy of the 19th century where people traded goods for services. In this case, teachers provided their services for weekly room and board at the various homes of pupils' parents. This mode of compensation came to an end with the shift of the US economy from an agrarian class to a more urban, industrial one of the 20th century (The North Dakota Legislative Council, 2001).

The thriving industrialized economy required fewer young people to support the farming industry, resulting in more students attending public schools. This unprecedented abundance of new students was the catalyst for school reform that took the shape of a more controlled mass education system, complete with bureaucratic layers of principals and superintendents to support a grade-level system. The compensation model resulting from these changes was intended to create a uniform pay schedule. This model defined pay levels by years of experience, gender, race, grade level taught, and allowed for subjective merit pay to be determined by the administrators (Tyack & Strober, 1981). This type of delineation was laced with aspects of racism, sexism and administrator subjectivity, which ultimately gave way to the third phase, a single-salary schedule (Protsik, 1995).

The 20th century was a time of "equal pay for equal work." In education this translated to a compensation model where equal work amounted to years of service and degree level (Clardy, 1988). The advantages of this reform offered administrators ease in developing budgets as well as negotiating contracts. Additionally, this model influenced the teacher-administrator relationship, in that administrators no longer dictated teachers' salaries (English, 1992; Lipsky & Bacharach, 1983). However, this model does not seem to support the evolving needs of 21st century schools. As with the previous shifts, compensation reform will likely be the result of societal and political pressures to produce new critical thinkers ready to succeed in our fast-paced global economy.

As this historical account has demonstrated, reform compensation models are reactions to a variety of societal or economic pressures. With the influx of technology in the past two decades, yet another wave of compensation models has emerged. The emerging Information Age and the resulting globalization have fueled the idea of mathematics for all. Once used as a gate-keeper, some now see mathematics as an impetus towards equality for all students. These pressures have brought about models that generally fall into three categories: pay for performance, differential pay, and alternative compensation.

The pay for performance models takes the form of increased pay on an individual teacher or on an individual school level. Individual teacher rewards generally depend on their students' standardized test scores, performance evaluations, additional training, or National Board Certification. School rewards are usually tied to school-based goals and benchmarks involving student test scores, absenteeism, and dropout rates. This type of model was first implemented in Douglas County, Colorado in 1994. In this school district, teachers received small bonuses for acquiring new skills and tied their annual salary increase to satisfactory performance evaluations (Odden & Wallace, 2004). The differential pay model is offered to teachers in high need areas, either as a one-time bonus or ongoing supplemental pay. For example, in the 2006-2007 school year, North Carolina provided signing bonuses of $15,000 to mathematics teachers who chose to work in a select group of schools (Silberman, 2006). Examples of alternative compensation include providing teachers with incentives like low-interest loans and student loan forgiveness. Each model is tied to required service in the local schools. Most common is a combination of these models. Georgia's House Bill 280 is one example of a combination model, in that the pay is differential due to its impact on only mathematics and science teachers, but it also includes an individual reward aspect after the fifth year. The structure of these models supports Richard Ingersoll's findings that "the prevailing policy response to these school staffing problems has been to attempt to increase the supply of teachers" (p.5, 2003). That is to say that the focus of these models is on recruitment rather than retention of teachers.

In enacting this bill, we believe that the state of Georgia has made a move in the right direction. We think this bill will not only help recruit new teachers to fill secondary mathematics vacancies, it could potentially decrease the percentage of secondary

mathematics teachers that are not fully certified, which currently stands at 14.3% (Henson, 2008). Another promising aspect of the bill is its inclusion of incentives for elementary school teachers. In providing current elementary school teachers with a monetary incentive for earning mathematics and science endorsements, we think the students will be the main beneficiaries. Liping Ma (1999) found that teachers with a better understanding of the mathematical content they teach are more effective teachers, therefore the bill's inclusion of at least two elementary content courses as a requirement to receive the extra compensation will help improve the quality of mathematics teaching.

While we applaud the aforementioned aspects of Georgia's law, we think that there are some areas the law neglects to address. First, the law omits discussion related to teacher performance until the sixth year of teaching. During the first five years of teaching, teacher pay is not tied to performance, however upon the sixth year the law makes a provision that teachers must meet "achievement criteria" to continue to move up the teacher pay scale. In order to prepare teachers for their impending performance evaluations in the sixth year, we propose that Georgia should help support teachers during the first five years through quality mentoring and induction programs in addition to exhibiting progress in performance evaluations. Related to the subject of teacher evaluations is the fact that the "achievement criteria" that teachers are required to meet in order to continue to receive additional pay is not readily available. In order to remedy this, we think teachers should be made aware of the requirements of the achievement criteria they must meet prior to entering the classroom.

In regard to the elementary school endorsements, the Bill (2009) stipulates that the "math and science endorsements shall…be based on post-baccalaureate nondegree programs, independent of an initial preparation program in early childhood education." We question the requirement that the endorsements must be earned post-baccalaureate. This stipulation does not allow teachers who acquired the endorsement during their undergraduate education to receive the additional pay. We believe that all teachers who attain the endorsements, regardless of when, should be compensated.

The effect this law will have on veteran mathematics teachers' morale is of concern. Under this law a fifth year mathematics teacher will be earning the same salary as a first year teacher because the law has no provisions for mathematics teachers currently teaching with over five years of experience. One way to address this concern is through performance pay for teachers. Teachers who meet teacher quality standards that are well researched, developed and implemented should qualify for the performance pay. Additionally, differential pay models may be enacted where mathematics teachers who acquire National Board Certification or higher degrees in their content area or areas applicable to those they teach will receive additional compensation. This is in contrast to Georgia's current model where teachers receive additional compensation for any advanced degree. Another method to consider is to allow all mathematics teachers to receive additional compensation for choosing to work in high needs schools. These schools have historically been the most difficult to staff and have the highest percentages of teachers out of field. These recommendations may aid in teacher retention as well as the concerns of teacher morale.

The fact that there is no guarantee for the length of time the law will be in effect is problematic. A guarantee of funding for a set period of time could provide stability that may be more effective in recruiting and retaining teachers. Furthermore, the staying power of this law is questionable because when the bill was signed, the State of Georgia had yet to allocate funds for this measure that carries an anticipated annual cost of 9.9 million dollars (McCaffrey, 2009). Guaranteeing a ten year continuance of this pay model with an option for renewal will allow the state to assess the law's effectiveness at combating the mathematics teacher shortage. In addition, this guarantee of funding would provide more security for the teachers which in turn may lead to better retention.

It is important to distinguish between the recruitment and retention of teachers when discussing ways in which we may solve the teacher shortage problem. Potentially, the most critical flaw we found in the bill is that although it does address the recruitment aspect, we find it does little to promote retention of current mathematics teachers. In the 2005-2006 and 2006-2007 school years, secondary mathematics teachers had an average annual attrition rate of 9.6% (Henson, 2008), while the five year annual attrition rate for all teachers with no previous experience was an even grimmer 41% (Afolabi, Eads & Nweke, 2007). These numbers suggest that simply hiring more new teachers will not stop the shortage; we must also put forth effort to retain our teachers. In a report on the possible teacher shortage, Richard Ingersoll (2003) found "a strong link between teacher turnover and the

difficulties schools have adequately staffing classrooms" (p. 9). Therefore, in addition to the recommendations we have previously stated, we encourage school districts to implement comprehensive mentoring and induction programs for teachers. In a 2004 study, Ingersoll and Smith found that teachers who did not participate in an induction program had a 40% probability of turnover; this percentage fell to 28% for teachers who had some type of induction. Furthermore, this turnover percentage decreased to less than 20% for teachers who participated in what Ingersoll and Smith defined as a "full induction" program consisting of aspects such as common planning time with colleagues, a helpful mentor in their content area, regularly scheduled collaboration time to discuss instructional issues, and a beginning teacher seminar.

When it comes to reforming mathematics teachers' compensation in order to recruit and retain effective teachers, Georgia's House Bill 280 is a step in the right direction, but the state still has a long way to go. In consideration of both the strengths and weaknesses found in Georgia's bill, we urge the rest of the nation to build upon the strengths and develop new ideas to address the weaknesses. As those interested in mathematics education, we must ask what we can learn from this bill that Georgia has produced. How can we make this law and others like it, better so that the end result is students' success in mathematics? The bill may aide schools in the recruitment of mathematics teachers, but we need to do more than continually recruit teachers. We need to find methods and models to support effective mathematics teachers in order to keep them in the classroom. We must find ways to not only recruit and retain effective mathematics teachers for the best and the brightest students, but also to provide all students with highly effective mathematics teachers.

So, where do we go from here? In order to continually move forward, we encourage educational stakeholders to support teacher compensation models that advance the vision of mathematics for all. By continuing to ask the right questions and debate the pertinent issues we will improve the practices of recruitment and retention of effective mathematics teachers. Here are some questions to get us started. How can we make laws that adequately address both teacher recruitment and retention? How can alternative forms of compensation affect recruitment and retention? Considering previous and current attempts at alternative models of teacher compensation, what are the potential consequences of these programs, and how can we avoid them in the future? What are the evaluation processes and standards for alternative models of compensation? We encourage you to start asking these questions. Then, go beyond asking, and begin looking for answers. A serious discussion needs to take place, a discussion that would result in all students receiving the best mathematics education this nation can offer through effective mathematics teachers.

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