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**Testimony to the Senate Education Committee
Regarding Interim Charge #3**

By

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Thank you for inviting me to testify on several important issues related to teacher retention. My testimony is organized into three main components: beginning teacher induction, professional development, school climate and teacher compensation.

Beginning Teacher Induction

One of the nice things about getting to talk about new teacher induction as a teacher retention strategy is that it's one of the few teacher retention strategies that is solidly supported by the research. That's why most discussions about new teacher induction have more to do with *how* to go about doing it rather than *whether* to do it. And that's the focus of my testimony today.

But we're a long way from having systemic and comprehensive teacher induction programs in Texas. Although state rules have long required all beginning teachers to have mentors, according to a 2009 article published in the Texas Business Education Coalition Newsletter, a survey by the Texas Association of School Administrators showed that fewer than half of the school districts in Texas offer new teacher induction programs. <http://tbec.org/component/content/article/64-july-2009/115-calculatedapproach>.

This may be partly due to the fact that, historically, there hasn't been a sustained funding structure for new teacher induction.

Early efforts to establish a statewide comprehensive mentoring program were promising. In 1999, the Texas State Board for Educator Certification began administering the Texas Beginning Educator Support System (TxBESS), a comprehensive mentoring/induction program for teachers with 2 or less years of experience. The program was funded with a three-year \$10 million grant from the U.S. Department of Education. Then, in 2003, the U.S. Department of Labor and the Texas Workforce Commission provided TxBESS with an additional \$3 million grant. According to a 2001-2002 third-year evaluation report and a spring 2003 final report to the Texas Workforce Commission, a total of 11,986

beginning teachers were served in that four-year time span. However, after that year, funding for administering the program ceased.

Due to the length of time TxBESS was in place, researchers were able to conduct a comprehensive evaluation of the program over a three-year period. That evaluation found that 89.2% of the first group of teachers who received assistance through TxBESS (1999-2000) returned for a second year of teaching compared to 80.8% of new teachers who did not; the statistics for those returning for a third year of teaching were even more compelling – 84% of the first group of TxBESS teachers returned for the third year compared to 75% of teachers who did not participate in TxBESS.

But the most notable of the TxBESS evaluation findings was that its strongest positive effect was on non-white beginning teachers; for example, 91.4% of Hispanic teachers and 87.4% of African American teachers who participated in TxBESS returned for their second year of teaching, compared to a statewide average of 73% of Hispanic teachers and 76.8% of African American teachers returning. The program was also associated with improved retention rates for secondary teachers, especially high school teachers.

These statistics are especially important because schools had to be high needs to be included in the TxBESS pilot. For these purposes, high needs schools were those identified as having low student achievement, a high percentage of low socioeconomic status students, and/or high rates of teacher turnover.

TxBESS Evaluation: Charles A. Dana Center. 2002. *Texas Beginning Educator Support System evaluation report for year three, 2001-02*. Austin, TX: State Board for Educator Certification:

On the national level, according to induction experts Ingersoll and Kralik (2004), "TxBESS is a well known example of a state teacher induction program." They found that the research and evaluation on the program "stands out for its usefulness and the findings provide a strong endorsement for the TxBESS program." ("The impact of mentoring on teacher retention: What the research says." *ECS Research Review: Teaching Quality*, Ingersoll, R., and Kralik, J.M. 2004, <http://www.ecs.org/clearinghouse/50/36/5036.htm>.)

Several years later, in 2006, the state legislature enacted a grant program to provide stipends and training to mentor teachers (the Beginning Teacher Induction/Mentoring program), which became operational in 2007-2008. BTIM was funded at \$15 million per year through the present. However, unlike TxBESS, BTIM was not designed to be a comprehensive new teacher induction program. For example, the enabling legislation states that each school district *may* assign a mentor teacher, and that funding under the program may be used **only** for providing mentor teacher stipends, scheduled time for mentor teachers to provide mentoring to assigned classroom teachers, and mentoring support through providers of mentor training. Although this is all certainly laudable, it only partly addresses one component (mentoring) of what is commonly considered a comprehensive induction program. Certainly, the TxBESS evaluation findings make the case for revisiting the current state-administered mentoring program to

find ways to enable it to be a comprehensive, sustainable new teacher induction program.

One way to do that which might be instructive is to look at how TxBESS was designed. TxBESS had six main components: performance standards that were aligned with the state teacher evaluation system, high-quality mentoring, program standards, ongoing professional development, standards-based formative assessment, and partnerships and collaboration. Each of these has been repeatedly cited in teacher induction research as necessary components of any good system, and they serve to establish the framework for the infrastructure needed to have a successful program.

The last component, about partnerships, is worth special attention, given the fact that over half of the teachers produced in Texas come through alternative certification programs. These programs, by their nature, necessitate coordination between the program and the hiring school district. This is because these teachers typically serve on a probationary certificate as teacher of record in a school district while completing their required one-year internship in the alternative certification program. In these situations, State Board for Educator Certification rules require that the programs collaborate with the campus administrator to assign each candidate a campus mentor during his or her internship. Given that mentoring is already an inherent component of many educator preparation programs, there's certainly the need for school districts to coordinate their new teacher induction program in collaboration with educator preparation programs from which they receive new teachers. A state-level comprehensive statewide teacher induction program would help ensure that this happens.

Another important component of any state-operated mentoring program is the establishment of broad program standards that school district induction programs should meet in order to receive state funding. Chief among these is that the district assign someone to serve as a district-level coordinator responsible and accountable for administering the program in compliance with state and district requirements, form advisory committees of teachers and other educators to inform the implementation of the district program, provide release time for both mentors and new teachers alike in order to meet together and to conduct observations, establish roles and responsibilities in local district policies for those involved in the program, and provide for supervising teams of school district and educator preparation program personnel which are assigned to each new teacher in the program.

Additionally, the state should provide assistance in the form of technical assistance centers and planning and program guides to help districts to successfully implement their programs.

As I mentioned earlier, one problem we've had is the lack of a sustained funding structure for such a program, so doing so should be given due consideration. However, also understanding the present budget crunch in this state, additional funding could be accessed or created under existing federal or state programs. (Title II, DATE). For example, the state District Awards for Teacher Excellence

grant program allows school districts to use forty percent of grant funds on a statutorily defined list of activities, **including “stipends and awards for the recruitment and retention of teachers in critical shortage subject areas, in subject areas with high percentages of out-of-field assignments, certified and teaching in their main subject area and/or with postgraduate degrees in their teaching areas,” and for stipends for mentor teachers.** However, this is much more limited than providing potential funding for a comprehensive induction program, given that it restricts funding only for stipends for mentors and retention of teachers. So perhaps a legislative rewrite of the permissible uses for DATE funding in this context could address the issue.

Professional Development

If there's one thing I'd like to make sure I get across to you, it's that teacher training/professional development is no panacea for the perceived weaknesses in the teaching force, if done in a vacuum. It has to be done right and it has to be done as part of a larger package of retention strategies. Luckily, we have some idea of what needs to happen for it to be done right. In a jointly produced resource guide to help schools put successful professional development programs in place, the National Staff Development Council (NSDC) and the Maryland Department of Education identified the key attributes needed:

They are:

- **Teachers should be actively engaged in planning and leading their own professional learning.** We have long advocated for teachers to be able to self-select much of their own professional learning. Teachers need differentiated professional learning rather than being sent to a one-size-fits-all training opportunity on a topic picked by someone at the district central office. As the NSDC resource guide states, “Carefully identifying teacher learning needs is especially important. Too often, professional development planners explicitly or implicitly assume that all teachers have essentially the same learning needs. Professional development that rests on this assumption tends to reflect a one-size-fits-all model, which often means that the professional development doesn't actually fit anyone's needs very well.”
- **School systems must be able to support a teacher's engagement in a process of continuous, iterative new learning over time as well as assess the impact of professional development on a teacher.**
- **In assessing the impact of professional development on a teacher, due to the difficulties in empirically establishing clear causal relationships between teacher participation in professional development and changes in student learning, especially as these changes are measured by standardized assessments, evaluators should concentrate on outcomes for teachers and proximal learning outcomes for students, with the latter reflected in indicators such as student work samples and results on locally**

developed benchmark assessments and/or end-of-course assessments.* Although the ultimate goal of teacher professional development is to improve student learning, the more immediate goal (as reflected in the outcomes and indicators) is improved teacher knowledge, skills, and practice.

- **Examining what participants thought of the professional development can yield an early indicator of whether and how participants are likely to apply new knowledge and skills in their professional practice.** Participant perceptions can also yield useful information on whether the professional development was implemented as planned and can help pinpoint components of the professional development that went well and those that may require modification. The easiest and most efficient way to collect data on participants' perceptions of professional development is through one or more surveys.
- **Evaluations of teacher professional development should be separate and distinct from teacher performance appraisals.** Evaluation teams should establish safeguards to ensure that data collection and reporting evaluation results do not overlap with teacher performance appraisals. The safeguards should be clearly visible to teachers and others involved in the professional development and evaluations.

*Several fundamental reasons make it difficult to empirically establish clear causal relationships between teacher participation in professional development and changes in student learning, especially as these changes are measured by standardized assessments. First, only the most ambitious, long-term professional development aims to improve teacher knowledge and skills across the entire scope of content covered by these assessments. **Second, many factors affect student learning in all of the areas covered by the assessments besides their performance as test takers. Most evaluations will not be able to control for these factors.**

Teacher Professional Development Evaluation Guide at www.nsd.org/news/evalguide.cfm.

School climate

In an intriguing new study by the National Bureau of Economic Research, researchers found that a teacher's "match quality" with the school to which the teacher is assigned, can "explain away" a quarter of, and is as economically important as, teacher quality. So a healthy portion of what is typically considered to be a teacher effect is in fact a teacher-school (or "match") effect. According to the study, these findings have important policy implications regarding optimal teacher placement (both for allocative efficiency and reducing teacher turnover), and they highlight the importance of context for value-added measures of teacher quality.

Additionally, the study found that **match effects are as quantitatively important in determining student achievement as teacher quality** — suggesting that policymakers and researchers should aim to understand what types of situations are conducive to creating high match quality.ⁱ

This “match” effect also illustrates the fact that a teacher who is not effective at one school could very well be effective at another school, which should be considered in discussions about teacher dismissals.

Further bearing this out, numerous studies have shown that school climate is also a key factor in teacher job satisfaction, and therefore, teacher retention or attrition. For example, a study conducted in Texas by University of Texas researcher Ed Fuller found that “After controlling for pay, student demographics, and school achievement, working conditions (especially leadership) is the strongest predictor of teacher retention.”ⁱⁱ

In perhaps the most comprehensive national survey of teachers about their views on education reform, recently released by the Gates Foundation and Scholastic, Inc, 96% of teachers surveyed chose supportive leadership as the most important factor among a list of factors impacting teacher retention; while 89% chose collaborative working environments as the next most important factor (98% of Texas teacher chose supportive leadership as the most important factor).ⁱⁱⁱ Yet in Texas we have made very little effort to systematically identify supportive school leadership.

According to an Education Week article summarizing another recent teacher survey by Public Agenda yielding the same results,^{iv} experts reviewing the survey data pointed this out as a sign that **leadership and school culture should be weighed as part of the intensifying national conversation about teacher effectiveness.** (*Incentives Alone Not Enough to Prod Teacher Effectiveness*, Published Online: October 19, 2009).

As teacher surveys being conducted nationally, at the state level, and even at individual schools, are starting to become more common, policymakers are beginning to address how the information from the surveys can be used to inform policies to improve teachers' working conditions and promote teacher and leadership effectiveness.

For example, the Santa Cruz, Calif.-based New Teacher Center's “Teaching and Learning Conditions” survey, begun in 2002, provides detailed information on the conditions teachers experience in individual schools, a step beyond national and state data. In North Carolina, which has administered the New Teacher Center's working-conditions survey several times since 2002, the state has integrated the survey information into its school improvement planning and into its standards for principals and superintendents.^v

Accordingly, we strongly recommend that results from staff climate or organizational health surveys be included in any systems developed around improving teacher retention and school leadership. Administered correctly, in such a way as to ensure that

teachers and parents feel able to give candid answers without repercussions, campus-based organizational health surveys would do much to inform key measures of campus performance, by gauging staff and parent attitudes about matters within the campus leadership's domain to improve. At the same time, any identified issues must be considered in the context of whether they are the result of influences outside of the control of campus leadership, such as district, state, and federal-level influences.

It is equally important that the results from these surveys must be gathered for meaningful uses, including use in campus improvement plans, use in reporting to the district and public, as well as used to inform decisions about needed support, professional development, systemic issues, and mechanisms to improve leadership. Results from campus-based surveys can also serve as a useful way to connect those at the district level with what's going on at the campus level in order to better inform decisions by district-level policymakers and administrators.

Teacher Compensation

The current school finance system is not structured to facilitate the attraction and retention of experience teachers by school districts. Contrary to assertions by some observers, experience is a factor in teacher quality. (Attached is a summary of some of the research showing positive effects of teacher experience on student learning.) It should be a policy goal of the Legislature to create a school finance system that gives districts some financial incentive to attract and retain experienced teachers. The current system does not, with the result that districts tend to "front load" teacher salaries to pay relatively high beginning teacher salaries while more experienced teachers are given short shrift and the career earning potential for teachers is significantly limited. Attached is a chart illustrating this salary schedule "compression" effect by showing beginning, 5-year, and 10-year teacher salaries paid by various school districts around the state.

I thank you for this opportunity to share my thoughts with you on this important topic and I look forward to continuing to work with you as you move forward.

Footnotes

ⁱ *Match Quality, Worker Productivity, and Worker Mobility: Direct Evidence from Teachers*, C. Kirabo Jackson, National Bureau of Economic Research
May 2010, <http://papers.nber.org/papers/w15990>

ⁱⁱ *Inequitable Opportunities to Learn: The Distribution of Teacher Quality in Texas*, Ed Fuller, PhD, Education Consultant, Research Specialist, University Council for Educational Administration, Department of Educational Administration, The University of Texas at Austin (2009)
www.equitycenter.org/.../Ed%20Fuller.Inequitable%20Opportunities.012509.pdf.

ⁱⁱⁱ *Primary Sources: America's Teachers on America's School*, March 2010,
http://www.scholastic.com/primarysources/pdfs/100646_ScholasticGates.pdf.

After making similar findings, a 2006 Metlife survey of the American teacher concluded “The good news for school principals and education leaders is that many of the factors that have the greatest impact (preparation and expectations, involvement in and ability to influence decisions and principal leadership) are within their domain to take action and improve.”
<http://www.metlife.com/WPSAssets/81821402701160505871V1F2006MetLifeTeacherSurvey.pdf>
(see attachment for more information).

^{iv} *Teaching for a Living: How Teachers See the Profession Today*, Jean Johnson, Andrew Yarrow, Jonathan Rochkind, and Amber Ott, Public Agenda, October 2009,
<http://www.publicagenda.org/files/pdf/teaching-for-a-living2.pdf>.

^v *Teacher Surveys Aimed at Swaying Policymakers*, Education Week, Published Online: March 31, 2010

Attachments

Excerpts from Metlife Survey of the American Teacher, 2006:

<http://www.metlife.com/WPSAssets/81821402701160505871V1F2006MetLifeTeacherSurvey.pdf>

• *Teachers who expect to leave are more likely than others to have principals who do not ask for their suggestions (29% vs. 15%), do not show appreciation for their work (21% vs. 11%), and do not treat them with respect (15% vs. 6%). These teachers are also more than twice as likely to have inadequate communication with their principals (20% vs. 9%) and with other teachers (11% vs. 4%).*

Two in 10 teachers say that their principals neither ask for their suggestions or opinions (19%), nor handle student discipline fairly (18%). Both of these problems are more pronounced at the secondary school level. More than one in eight teachers reports that their principals do not show appreciation for their work (14%); do not show direction for their schools (14%); do not make themselves accessible during the day (13%); and do not provide adequate communication (12%). One in 11 teachers (9%) reports that his/her principal does not treat him/her with respect.

Specifically, significant predictors of a teacher's satisfaction with his/her career include:

- Teacher is not assigned to classes that s/he feels unqualified to teach.
- Teacher feels that his/her salary is fair for the work done.
- Teacher has enough time for planning and grading.
- School does not have problems with threats to teachers or staff by students.
- School does not have problems with disorderly student behavior.
- Teacher is treated as a professional by community.
- Teacher has adequate involvement in team building and problem-solving.
- Teacher has adequate ability to influence policies that affect him/her.
- Teacher has adequate time for classroom instruction.
- Teacher has adequate ability to influence student promotion or retention.
- Teacher has adequate involvement in shaping the school curriculum.

These issues can be addressed at the school and school district level to help increase teachers' career satisfaction. An examination of the experiences predicting whether a teacher is likely to leave the profession within the next five years yields illuminating insights. ***While dissatisfaction with their career and current school are significant predictors of teachers' likelihood to leave, the most significant predictor is being assigned to classes the teacher does not feel qualified to teach.*** With other variables held constant, a teacher who reports being assigned to classes s/he does not feel qualified to teach is 1.9 times more likely to say s/he is likely to leave. Age is also a factor, with older teachers more likely to leave. Finally, having a mentor during the first year of teaching significantly increases the odds that a teacher will stay in the profession.⁵

As can be seen from these analyses and profile comparisons, dissatisfaction and likelihood to leave the profession are driven by a variety of factors. ***The good news for school principals and education leaders is that many of the factors that have the greatest impact (preparation and expectations, involvement in and ability to influence decisions and principal leadership) are within their domain to take action and improve.***

Research supports the fact that teacher experience positively impacts student achievement:

A. "Experience: Consistent with other studies (see, in particular, Hanushek, Kain, O'Brien and Rivkin 2005; Clotfelter, Ladd and Vigdor 2006), we find clear evidence that teachers with more experience are more effective than those with less experience. **Compared to a teacher with no experience, the benefits of experience rise monotonically to a peak in the range of 0.092 (from model 4) to 0.119 (from models) standard deviations after 21-27 years of experience, with more than half of the gain occurring during the first couple of years of teaching.**

Though the positive results by years of teacher experience are clear and robust to various model specifications, the thorny issue remains of whether the rising returns to experience reflect improvement with experience or differentially higher attrition of the less effective teachers. The negative coefficients of -0.019 and -0.033 on the indicator variable in the math equations suggests that the teachers who stay may be less effective on average than the ones who leave, a finding that is inconsistent with the differential attrition explanation for the rising returns to experience. Hence, we conclude that the returns to education that emerge from our basic model are primarily attributable to learning from experience.²⁰

(How and why do teacher credentials matter for student achievement?, March 2007, Charles T.*

Clotfelter, Helen F. Ladd, Jacob L. Vigdor, Sanford Institute, Duke University,

http://www.caldercenter.org/PDF11_001_058_Teacher_Credentials.pdf

B. "Murnane and Phillips (1981): Controlling for a variety of student and teacher background variables, Murnane and Phillips found that, **among teachers in their first seven years of teaching, experience was a significant positive effect on elementary school student achievement.** The researchers found a weak negative relationship between experience and student achievement among teachers with eight to 14 years of experience, and a **positive effect ... for teachers with 15 or more years of teaching experience. They argue that the early-career effect is likely to reflect "learning by doing", while the later-career effect is the "vintage effect" that reflects differences in the average abilities of teachers who entered the profession at various points in time.**

Ferguson (1991) found that teacher experience accounted for slightly more than 10% of the variation in student reading and math scores across almost 900 Texas school districts serving over 2.4 million students. In the elementary grades, Ferguson found ... that once teacher have five years' experience, additional years of teaching do not add to their effectiveness. **For high school students ... he found that teachers with nine or more years of experience were**

associated with higher student scores than teachers with only five to nine years of experience.

Grissmer et al's (2000) analysis of state-level NAEP data included an investigation of the relationship between the proportion of teachers in a state with more than two years of experience and elementary student performance on the NAEP. **They found that in states where a high proportion of teachers in a state with more than two years of experience, there is a discernible, positive effect on achievement.**

"Summary: While research indicates that there is a relationship between student achievement and teacher experience, at the elementary level it appears that the relationship is most evident in the first several years of teaching, with some evidence of vintage effects for very experienced teachers. Estimates of the effect of teacher experience on High School student achievement suggest that experience has a more sustained effect that continues later into teachers' careers."

(Teacher Quality, Understanding the Effectiveness of Teacher Attributes, By Jennifer King Rice, August 2003, Economic Policy Institute, http://www.epinet.org/content.cfm/books_teacher_quality_execsum_intro#ExecSum)"

C. "I also find evidence that teaching experience significantly raises student test scores, particularly in reading subject areas. Reading test scores differ by approximately 0.17 standard deviations on average between beginning teachers and teachers with ten or more years of experience." (The impact of individual teachers on student achievement: Evidence from panel data, Rockoff, J., 2004. American Economic Review, 94 (2), May 2004: 247-252 .

D. "Brand new teachers-those who are still learning their craft-are less likely to be effective in enabling their students to meet state standards than teachers with at least a few years of experience.³

³ Robert Gordon, Thomas J. Kane and Douglas O. Staiger. 2006. *Identifying Effective Teachers Using Performance on the Job*. Washington, DC: The Brookings Institution. Available:

<http://www.brookings.edu/papers/2006/04education--gordon.aspx>.

See also: Don Boyd, Hamilton Lankford, Susanna Loeb, Jonah Rockoff, and Jim Wyckoff. 2007. *The Narrowing Gap in New York City Teacher Qualifications and its Implications for student Achievement in High-Poverty Schools*. The Teacher Pathways Project. Available:

<http://www.teacherpolicyresearch.org/portals/1/pc1fs1NYCTeacherSortingPaperFinal.pdf>

(Their Fair Share: How Texas-Sized Gaps in Teacher Quality Shortchange Poor and Minority Students, [http://www2.edtrust.org/NR/rdonlyres/OE68E606-0371-4C7D-BEF5-](http://www2.edtrust.org/NR/rdonlyres/OE68E606-0371-4C7D-BEF5-9D07CA415171/0ITXTheirFairShare.pdf)

9D07CA415171/0ITXTheirFairShare.pdf (Feb. 2008))

E. "Existing empirical studies suggest that teacher stability rates for high-poverty schools also directly impacts the educational outcomes of students. For example, Hanushek, Kain, O'Brien and Ravin's (2005) investigation found that student achievement gains were considerably lower in classrooms in which teacher turnover was a factor. The Alliance for Excellent Education (2005) also reported that high teacher attrition rates have negative effects on student achievement. They further stated "**A major result of teacher attrition and inadequate induction is that poor, urban, and minority children are taught to be less experienced, less qualified teachers who do not stay long enough to become an expert, high-quality teachers their students desperately need**". Likewise, Ingersoll (2001) argued that when qualified urban teachers depart their positions, the students are more apt to be then taught by inexperienced, less qualified teachers, which both have been associated with lower student achievement. Additionally, Boyd, Lankford, Grossman, Loeb, and Wyckoff (2007) concluded that teacher attrition can negatively influence a school's learning environment. When the teaching force is constantly changing, administrators find it difficult to implement policies and standards that create a school climate conducive to student

learning." (*Addressing urban high-poverty school teacher attrition by addressing urban high-poverty school teachers*, Educational Research and Review Vol. 3 (1), pp. 001-009, January 2007

<http://ednews.org/downloadattachment.oho?ald=ed97e696271572fbacc07d87b5e2d823&articleId=22615>

Available online at <http://www.academicjournals.org/IERR>, ISSN 1990-3839@ 2007 Academic Journals)

F. Finally, an article in the Seattle Post-Intelligencer described a recent study by the Washington State Institute for Public Policy, Dec., 2007, which found a **dramatic improvement in student achievement between one and five years of teacher experience and a more gradual boost in the years following**. Student achievement in these studies was mostly tracked through scores on standardized reading or math tests. The report makes a preliminary recommendation that any changes in the way teachers are paid should emphasize financial rewards for experience rather than higher pay for teachers with graduate degrees.

There is research finding that teacher experience does not significantly impact student achievement, but many of those studies have since been discredited. For example, in the 2003 Economic Policy Institute report noted above, authored by Ms. Rice, she reviewed of a wide range of empirical studies that examine the impact of teacher characteristics on teacher effectiveness in order to draw conclusions about the extent to which these characteristics are, in fact, linked with teacher performance. As described earlier, she examined studies that explicitly measured teacher experience

as a key treatment. As such, she rejected studies such as ones identified by Eric Hanushek (1997) that cast doubt on the positive relationship between teacher experience and student achievement as follows:

"Eric Hanushek, (1997) identified 207 studies that included teacher experience as an independent variable predicting student achievement. He found that 29% of the estimates of the impact of experience on teacher quality were statistically significant and positive. 5% were statistically significant and negative, and 66% were not statistically Significant. However, Ms. Rice notes that among the statistically significant findings, positive effects are reported almost six times as often as negative effects. "As for the preponderance of statistically insignificant effects, it's not clear from Hanushek's analysis whether the studies were actually designed to test the impact of experience on student achievement, what other variables were included in the models tested, or what measure of teacher experience was employed in the studies. Further casting doubt on Hanushek's conclusions about teacher experience, Greenwald, Hedges, and Laine (1996) conducted a more sophisticated meta-analysis of education production function literature from which they concluded that teacher experience, is, in fact, related to achievement. One explanation for the discordant evidence about the inconsistent impact of teacher experience relates to the measurement of this variable. Most school districts measure and reward teacher experience in terms of years they worked in the district. However, studies examining the impact of teacher experience could instead measure this variable as the total number of years that the teacher has taught. Another explanation for the inconsistent evidence on teacher experience is the way this variable has been used in studies. Most analyses have included teacher experience as a control variable ... Typically, these studies ... find no evidence of a linear relationship between teacher experience and their effectiveness. Other studies that focus on teacher experience as they key independent variable have found that nonlinear models are far more likely to capture an effect for this variable."

DISTRICT	SCHOOL YEAR	START SALARY (1ST YEAR)	5 YEARS	10 YEARS
Dallas	2007-08	\$43,500	\$47,750	\$50,300
Fort Worth	2007-08	\$44,500	\$46,332	\$47,855
Denison	2007-08	\$37,000	\$39,000	\$41,000
Fort Bend	2007-08	\$43,200	\$46,350	\$48,734
Katy	2007-08	\$42,130	\$42,642	\$45,576
Houston	2007-08	\$42,745	\$44,805	\$47,380
Abilene	2007-08	\$33,500	\$33,750	\$37,040
Amarillo	2007-08	\$38,500	\$39,961	\$42,189
Wichita Falls	2007-08	\$35,240	\$38,040	\$41,040
Leander	2007-08	\$40,200	\$42,410	\$44,021
Nacogdoches	2007-08	\$35,500	\$38,000	\$40,500
Northside (San Antonio)	2007-08	\$43,500	\$44,169	\$46,784
San Antonio	2007-08	\$41,525	\$42,225	\$44,576
El Paso	2007-08	\$40,800	\$42,550	\$44,300
San Angelo	2007-08	\$35,000	\$36,025	\$38,275
Plano	2007-08	\$43,148	\$44,500	\$46,185
Laredo	2007-08	\$41,000	\$42,300	\$43,800
Waco	2007-08	\$37,000	\$38,500	\$40,400
Beaumont	2007-08	\$38,900	\$40,318	\$41,497
Plainview	2007-08	\$32,120	\$36,360	\$41,840
STATE	2007-08	\$27,320	\$31,560	\$37,040