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**TEXAS STRATEGIC PLAN  
TO ADDRESS THE TEACHER SHORTAGE**

**October 2002**

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**Adopted by the  
Texas Higher Education Coordinating Board  
In accordance with  
Senate Bill 1  
General Appropriations Act  
Section 46, page III-66  
77th Texas Legislature**

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### **Coordinating Board Mission**

The mission of the Texas Higher Education Coordinating Board is to provide the Legislature advice and comprehensive planning capability for higher education, to coordinate the effective delivery of higher education, to administer efficiently assigned statewide programs, and to advance higher education for the people of Texas.

THECB Strategic Plan

### **Coordinating Board Philosophy**

The Texas Higher Education Coordinating Board will promote access to quality higher education across the state with the conviction that access without quality is mediocrity and that quality without access is elitism. The Board will be open, ethical, responsive, and committed to public service. The Board will approach its work with a sense of purpose and responsibility to the people of Texas and is committed to the best use of public monies.

THECB Strategic Plan

# STRATEGIC PLAN TO ADDRESS THE TEACHER SHORTAGE

October 2002

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# STRATEGIC PLAN TO ADDRESS THE TEACHER SHORTAGE

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## EXECUTIVE SUMMARY

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The 77th Texas Legislature directed the Texas Higher Education Coordinating Board to “develop a strategic plan to increase the number of certified teachers in the state as quickly as possible.”\* The Coordinating Board was further instructed to collaborate with the Texas Education Agency, the State Board for Educator Certification, the Texas Workforce Commission, the Governor’s Office, and the Legislature in development of the plan.

Merely increasing the number of certified teachers in the state would not eliminate the state’s teacher shortage. Other factors must be considered as well. Higher salaries and better working conditions for teachers must be key ingredients in any plan to ensure that the state has an adequate supply of certified teachers in the classroom, and these elements became a primary focus of the *Strategic Plan to Address the Teacher Shortage*.

The plan sets a single goal: Increase the number of fully certified educators employed in the teaching profession from 276,000 in 2002 to 360,000 by 2015 to ensure high-quality learning for every Texas student. To reach this goal, the plan sets forth four critical challenges which include closing the gaps in teacher salaries, retention, certification, and preparation/continuing education. Objectives and benchmarks addressing these challenges are included.

The objectives, with teachers salaries discussed first, are laid out in the order of their potential for having the greatest impact on reducing the teacher shortage. The objectives are also interrelated, so the success toward one of them determines success toward others.

None of the objectives will be easy to meet, and the state has struggled with them for decades. However, this long-term plan marks the first time that concrete, measurable objectives have been set to provide a rallying point for all state agencies, local entities, and individuals to collaborate and to commit their resources to reaching the ultimate goal. With a specific course laid out by state leaders, the collective efforts of all who care about education can be brought more effectively to bear to help ensure a brighter future for Texas.

\* Senate Bill 1, General Appropriations Act, 77th Legislature (Section 46, page III-66)

# STRATEGIC PLAN TO ADDRESS THE TEACHER SHORTAGE

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**GOAL: INCREASE THE NUMBER OF FULLY CERTIFIED EDUCATORS EMPLOYED IN THE TEACHING PROFESSION FROM 276,000 IN 2002 TO 360,000 BY 2015 TO ENSURE HIGH QUALITY LEARNING FOR EVERY TEXAS STUDENT**

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**OBJECTIVE 1: CLOSE THE SALARY GAP**  
**Continue to raise classroom teacher salaries to achieve a 30 percent increase in constant dollars as compared to classroom teacher salaries in 2001.**

*Strategies for the State:*

- Establish and implement a differentiated pay scale for subject matter shortage areas on a regional basis.
- Provide supplemental pay for teachers who work in high-needs schools as determined by the state's accountability ratings.
- Provide salary incentives for top-performing teachers in their seventh year of service and beyond to remain in the classroom teaching students.
- Establish and implement differentiated staffing with appropriate salaries to maximize the effective use of certified teachers and paraprofessionals.

**OBJECTIVE 2: CLOSE THE RETENTION GAP**  
**Raise retention rate of first-year educators teaching for five consecutive years or more in the Texas educational system from 60 percent in 2001 to 90 percent by 2015.**

*Strategies for the State:*

- Fully develop and utilize competitive grant programs that support professional development and recognition for educators
- Remove barriers to retired or non-practicing teachers to enter or re-enter the profession
- Make workplace conditions attractive to professional educators
  - Implement optimum teacher/student ratios
  - Improve facilities
  - Ensure personal safety
  - Increase number of educational aides, clerical assistants, and school ground monitors to support teachers in their responsibilities

**OBJECTIVE 3: CLOSE THE CERTIFICATION GAP**  
**Increase the number of teachers certified annually from 16,700 in 2002 to 25,000 by 2005; to 35,000 by 2010; and to 50,000 by 2015**

*Strategies for the State:*

- Increase state funding for high-quality alternative certification, post-baccalaureate, and conventional programs
- Make educator preparation and certification programs affordable:
  - Provide grants, loans, and scholarships for every teaching candidate
  - Set tuition and/or fees in a manner that encourages greater participation in educator preparation programs
- Create effective financial incentives for those choosing to enter the teaching profession
- Implement a targeted campaign to promote the value of teaching, the preparation required, the types of certification programs available, and the financial aid available

**OBJECTIVE 4: CLOSE THE PREPARATION/DEVELOPMENT GAP**  
**Reduce out of field teaching from 30 percent in 2001 to 10 percent by 2015 and increase quality of preparation and professional development opportunities for beginning and experienced educators**

*Strategies for the State:*

- Establish 10-year projections on the required number of educators in each teaching field and set targets for educator preparation programs to meet that number
- Provide effective financial assistance to certified teachers to obtain credentials in areas of critical shortage
- Expand mentorship and induction programs for new teachers, allowing greater release time for program participation
- Create incentives for higher education clinical faculty to support K-12 instruction.

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## IMPLEMENTATION

These recommendations represent a shared vision and commitment to eliminating the teacher shortage in Texas. To assure that progress is made towards these goals, the state shall direct the P-16 Council to oversee implementation of the plan. Central members of the P-16 Council (Texas Higher Education Coordinating Board, Texas Education Agency, and State Board for Educator Certification) shall establish action plans with targets to assess progress toward the goal. Collaboration among these agencies, as well as among other partners to the P-16 Council, will be essential to reaching the goals and objectives of the *Strategic Plan to Address the Teacher Shortage*.

# STRATEGIC PLAN TO ADDRESS THE TEACHER SHORTAGE

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## BACKGROUND AND SUPPORT

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### INTRODUCTION

Texas' continued success in a wide variety of education initiatives depends on employing and retaining well-prepared, high-quality teachers in every classroom – an endeavor that challenges the state. At the beginning of the fall 2002 semester, there were approximately 37,000 teaching vacancies to be filled in Texas schools. Of the close to 290,000 teachers eventually hired, almost 33,900 were not holding a standard certificate and over 56,000 of those holding certificates were teaching out of their field of study. Clearly, the state fell short of its need for highly qualified teachers.

New state and federal initiatives will add to the challenge of meeting the demand for teachers over the next few years. To meet these state and federal requirements, leaders at all levels must embrace the challenge and take active roles in identifying, attracting, preparing, placing, and retaining highly qualified teachers in Texas schools.

### HOW MANY TEACHERS DOES TEXAS NEED?

#### Current Shortages

The State Board for Educator Certification (SBEC) offered its *Defining the Teacher Shortage* report to the Joint Committee on the State's Shortage of Educational Professionals in June 2002. The following information comes from that report, a copy of which may be found in Appendix A of this document. Based on the SBEC report, the teacher shortage ranges from zero (based merely on having an adult present in the classroom) to more than 56,500 (based on those teaching out-of-field) as outlined in Table 1 and discussed below.

**Table 1: Determining the Teacher Shortage**

Methods Used to Estimate the Shortage of Teachers	2000-2001 Shortage	2001-2002 Shortage
1. Number of classrooms without an adult to instruct students	0	0
2. Number of certified teachers available to teach	0	0
3. Number of teaching positions to be filled before the start of school	39,652	37,000
4. Number of teachers on emergency permit	14,440	14,488
5. Number of teachers not holding a standard certificate	21,077	33,899



<b>Methods Used to Estimate the Shortage of Teachers</b>	<b>2000-2001 Shortage</b>	<b>2001-2002 Shortage</b>
6. Number of teacher full-time equivalents assigned to teach out of their field of expertise	42,237	47,053
7. Number of teachers assigned to teach out of their field more than 50 percent of the day using a subject area analysis	40,138	42,808
8. Number of teacher full-time equivalents assigned to teach out-of-field using a subject level analysis	45,155	56,551
9. Number of teachers assigned to teach out of their field of expertise for more than 50 percent of the day	41,197	50,381

Source: Texas State Board for Educator Certification

The first method used in Table 1, identifying the number of classrooms without an adult present to instruct students, indicates there is no shortage – a finding that is misleading since it does not take into account the qualifications of that adult. Quality learning is ensured only by quality teachers, such as those who have been certified.

The second method considers only the number of certified teachers available to teach in the state. Approximately 600,000 people hold valid Texas teaching credentials – more than twice as many than actually are teaching in Texas. So in terms of the available pool, the shortage as defined by the second method is zero.

The third method for determining the teacher shortage examines the number of teaching positions to be filled before the start of the school year. Statewide, just under 37,000 teaching positions needed to be filled to begin the 2002 academic year, according to estimates from school districts. Notably, this method does not examine the number of under-qualified teachers already in the classroom, nor does it account for the number of teachers moving from one district to another.

The fourth method looks at the number of current teachers who are not fully qualified to be teachers. Emergency certifications are issued to people with four-year degrees who do not hold Texas teaching certificates or to individuals who hold Texas teaching certificates in areas inappropriate to his or her teaching assignments. In the 2001-2002 academic year, 14,488 teachers held emergency permits. Most teachers on emergency permits are the least qualified teachers, except for those that are teaching out of their field of expertise.

The remaining methods, identified on the table as Nos. 5 through 9, indicate much higher teacher shortages, ranging from approximately 21,000 teachers to more than 56,500 teachers. All of these methods document the number of teachers who are not fully certified under Texas rules and regulations.

For example, the fifth method estimates the shortage of teachers by examining the number of teachers who do not hold a standard teaching certificate. The sixth and seventh methods count the number of teachers assigned out-of-field. The eighth and ninth methods employ narrower perspectives to determine whether a teacher is assigned in-field or out-of-field.

While there is an overall shortage of teachers, the need for teachers is particularly acute in specific subject areas such as mathematics, science, bilingual and special education at the secondary grade levels, as well as in certain types of schools. Research indicates that Texas schools with high proportions of economically disadvantaged and minority students had significantly greater percentages of teachers assigned to teach out-of-field. Likewise, urban schools had significantly greater percentages of teachers assigned to teach out-of-field than suburban schools.

### Effect of Enrollment Growth on Projected Shortages

The number of public school students increased by 20 percent over the past decade, and is expected to continue to increase by 60,000 to 75,000 students annually. Table 2 indicates the number of additional teachers that were needed to accommodate this growth as well as new and vacant positions in Texas schools in the 1990s. At a minimum, the state can anticipate similar growth in the next decade.

**Table 2: The Need for Teachers – A Ten-Year Profile**

Fall	Teacher Count	Fall	Teacher Count	Additional Teachers Needed	Percent	Teachers Not Returning	Percent	Total Teachers Needed
1990	208,681	1991	215,313	6,632	3.17	17,592	8.43	24,224
1991	215,313	1992	222,461	7,148	3.32	17,228	8.10	24,596
1992	222,461	1993	229,713	7,252	3.26	17,615	7.92	24,867
1993	229,713	1994	237,289	7,576	3.30	18,727	8.15	26,303
1994	237,289	1995	243,009	5,720	2.41	19,592	8.26	25,314
1995	243,009	1996	250,626	7,617	3.13	20,695	8.52	28,312
1996	250,626	1997	257,396	6,770	2.70	22,228	8.87	28,998
1997	257,396	1998	263,106	5,710	2.22	25,696	9.98	31,406
1998	263,106	1999	270,834	7,728	2.92	25,489	9.69	33,217
1999	270,834	2000	277,040	6,206	2.29	28,449	10.50	24,655

Source: Texas Education Agency and the Texas State Board for Educator Certification

### The Effect of the Supply of New Teachers on Projected Shortages

The number of newly certified teachers fails to meet the current demand for new teachers. For the 2001 academic year, 14,355 newly certified teachers were produced by Texas' educator preparation entities. In addition, approximately 3,000 out-of-state teachers were hired to teach in Texas schools. As a result, there were approximately 17,355 new teachers available for the estimated 39,652 positions that needed to be filled for the 2000-2001 academic school year. A similar shortfall occurred in the 2001-2002 school year, with approximately 19,000 new teachers available for an estimated 37,000 vacancies. Significantly, that year also marked the first time that over 50 percent of newly hired teachers did not hold a standard certificate.

Some of the teacher shortage is being relieved by teachers who are returning to the profession. In the 2000-2001 academic year, 25 percent of the new teachers did not teach the previous academic year, but had taught for at least one year between the 1994-1995 and the 1998-1999 academic years.

Most new teachers are recent college graduates, and that trend is likely to continue. However, the 2002 Public Agenda study *A Sense of Calling* found that 78 percent of college graduates think teachers are seriously underpaid, and 69 percent think teachers do not have adequate opportunities for career advancement. Most "twenty-somethings" are looking forward to a future where their salaries will progress on pace with their experience, and they do not believe they will find that in teaching. With these perceptions, it will become increasingly difficult to attract young people to teaching careers.

### **The Effect of Non-Retirement Attrition on Projected Shortages**

Increasing the supply of teachers can reduce the shortage of teachers, but the demand for teachers is increased as more of them leave the profession. Historically, in all states, teacher attrition is greatest for teachers with five or fewer years of experience and for those who retire. The one-year attrition rate for all teachers in Texas has ranged from 8 percent to 13 percent between the 1990-1991 and 2000-2001 academic years. In comparison, the one-year attrition rate for all teachers in the United States is approximately 6 percent. Attrition is particularly high among new teachers. During some periods, as many as 40 percent of newly certified teachers in Texas have left the profession within three to five years, according to the State Board for Educator Certification.

In addition, the percentage of teachers with five or fewer years of experience has increased from 32 percent to slightly more than 35 percent over the past eight years, according to the Texas Education Agency. Since teachers with five or fewer years of experience have greater attrition rates than other teachers (except those who are retiring), attrition will probably increase in coming years because of the increasing proportion of recently certified teachers.

### **The Effect of Teacher Retirement Attrition on Projected Shortages**

Retirement projections also suggest that the demand for new public school teachers will increase over the next decade. As shown on Table 3 on the following page, an average of 9,000 teachers will retire each year during the next decade. By 2010, more than 117,000 teachers, or more than one-third of the current teaching workforce, likely will have retired.

**Table 3: Teacher Retirement Estimates**

<b>FY</b>	<b>Early Age Eligible</b>	<b>Normal Age Eligible</b>	<b>Total</b>
2001	13,668	20,748	34,416*
2002	3,320	5,581	8,901
2003	2,977	6,145	9,122
2004	3,050	6,645	9,695
2005	2,906	7,244	10,150
2006	1,737	7,438	9,175
2007	1,157	7,919	9,076
2008	730	8,177	8,907
2009	244	8,800	9,044
2010	828	8,937	9,765
<b>Totals</b>	<b>29,745</b>	<b>87,634</b>	<b>117,379</b>

Source: Teacher Retirement System of Texas

\* A large number of teachers postponed retirement following the 1999 pay raise of \$3,000 per year to take advantage of higher retirement benefits which are based on the last three years of salary.

### **The Effect of State and Federal Initiatives**

In particular, more rigorous student achievement standards characterized by a new curriculum (Texas Essential Knowledge and Skills, or TEKS) and a new state assessment tool (Texas Assessment of Knowledge and Skills, or TAKS), to be implemented in 2003, will increase the demand for well-prepared, high quality, subject-certified teachers in the appropriate classrooms. In addition, the 77th Texas Legislature passed House Bill 1144, which establishes the college-preparatory Recommended or Advanced High School Program as the standard curriculum for Texas public high school students who enter the ninth grade in the 2004-2005 school year. Although students will be able to opt out of the curriculum with the permission of their parent or guardian and a high school counselor or administrator, an estimated 3,500 to 4,000 additional well-prepared, highly qualified teachers will be needed to teach the more-advanced curriculum. These teachers will be needed in schools that must form new classes to meet advanced requirements, particularly in math, science, and foreign language.

Federal initiatives also will increase the demand for teachers. The federal *No Child Left Behind Act of 2002* requires states to develop a plan to assure that all teachers are “highly qualified” by the 2005-2006 school year. This legislation requires all new teachers to be certified or licensed by the state, hold at least a bachelor’s degree, and pass a rigorous state test on subject knowledge and teaching skills. Current teachers will have to meet similar criteria. The legislation strongly encourages elimination of the practice of teaching out-of-field.

### **Eliminating the Shortage**

The goal of the Texas *Strategic Plan for Addressing the Teacher Shortage* sets a target of 360,000 certified teachers working in the classroom by the year 2015. This number comprehends growth in student enrollments, implementation of more rigorous curriculum demands, more extensive application of policies on student/teacher ratios, and the effects of teacher retirements and other attrition.

To fully meet state and federal requirements as well as the needs of students, the number of teachers in the classroom must grow each year through 2015. To succeed, the state must address underlying reasons for the teacher shortage in Texas.

## **WHY IS THERE A SHORTAGE?**

Texas has produced enough certified teachers to eliminate the teacher shortage, but too few teachers are working as educators in the state's schools. Approximately 600,000 people hold fully certified teaching credentials in Texas, but only 276,000 of them were in Texas schools in fall 2001. This indicates there is not a shortage of certified teachers in Texas, but rather a shortage of certified teachers willing to work in the teaching field.

It would be unrealistic to expect all certified teachers to be in teaching positions. Some have retired or are not presently working in any field. Some have chosen other career paths, which also occurs in other professions. Some who received a teaching certificate in college viewed it as a “fall-back” career and never seriously intended to teach. But even given all these factors, the volume of those with teaching credentials who are not teaching far exceeds any other profession. More than one-half the people with Texas teaching certificates have decided to leave the teaching field – or to never enter it in the first place. The factors that cause teachers to leave or potential teachers to shy away from the field can be summed up in two areas: salary considerations and workplace conditions.

### **Salary Considerations**

To eliminate the teacher shortage, Texas must find ways to fund teachers' salaries appropriately. In recent legislative sessions, the Texas Legislature improved teacher pay and benefits by a large amount. In 1999, the 76th Texas Legislature raised the state minimum salary schedule by \$3,000 at every step. In 2001, the 77th Texas Legislature established a teacher health insurance program for certain teachers and school employees and provided every teacher in the state a \$1,000 medical account. However, teachers' salaries in Texas need continuing attention, despite the significant improvements that occurred in 1999 and 2001 as a result of legislative actions.

The across-the-board pay increases that the state enacted were an important step that moved the average teacher pay upward. Since 1999, there have been no further statewide pay increases, and teachers' salaries currently remain under the discretion of local school boards. Three years later, at the beginning of the 2002-2003 academic year, Texas classroom teacher pay on average remains below national levels. The most recent data from the state rankings compiled by the National Education Association (NEA) cites the following: the national average for salaries of public school teachers in 1999-2000 was \$41,754 per year, with Texas ranking 28th of 50 states with an average salary of \$37,567 per year. In that year, Texas teachers were paid 90 percent of the national average. Salaries in Texas increased in 2000-2001 to \$38,361 per year, up by about 2 percent. The national salary increased in 2000-2001 to \$43,335, with Texas moving up in the state rankings to 26th. However, Texas salaries had slipped to 88.5 percent of the national average in that year. Another important fact to note is the current value of teacher salaries in 1992 dollars. From 1992 to 2002, teacher salaries have shown no

increase in value when inflation is taken into account. So while salaries have increased slowly, the actual value of those salaries has not.

Calls to action on improving teacher salaries continue to come from many significant organizations and stakeholders in the state. In 2001, the Sid W. Richardson Foundation Forum published a report, *Excellent Teachers for all Texas Schools: Proposals for Engaging Educational Stakeholders in Concerted Action*, in which its top legislative recommendations included “Modify the state’s teacher salary schedule to support a more flexible, market-driven compensation system for teachers in high-need fields.” The major professional organizations for Texas educators have long endorsed increased teacher pay. The state agencies with joint responsibilities for developing a statewide plan to address the shortage of teachers (Texas Higher Education Coordinating Board, Texas Education Agency, State Board for Educator Certification, and Texas Workforce Commission) have been on record as supporting meaningful increases in teacher salaries. Other entities such as the P-16 Council, the Joint Advisory Council, and the Texas Business and Education Coalition also have been long-time supporters of increased compensation for teachers. Regardless of the methodology that might be used to increase teacher salaries, all of these policy groups agree that improving teacher salaries is imperative to recruit and retain sufficient numbers of high quality teachers for the schoolchildren of Texas.

## Workplace Conditions

Research consistently finds dissatisfaction with workplace conditions as a key factor in teacher attrition. The literature suggests that workplace dissatisfaction in classroom teaching are systemic rather than personal. Other than salaries, the Education Commission of the States (ECS) Issues Reports, 2002, found that the causes for dissatisfaction cited by educators include stressful or unsupportive work environments, marked by:

- Student and parental apathy
- Discipline problems
- Inadequate physical facilities
- Lack of collegial support
- Unsupportive leadership
- Lack of decision-making authority

Studies indicate that the demands placed on teachers within the past decade cannot be overlooked. Society has asked its schools and its teachers to do more and more. Recent studies of job satisfaction and career motivation of teachers point to the erosion of professionalism and teacher morale. Study participants who already have left the teaching profession or would consider leaving identified the top working conditions reasons which include:

- Increased accountability (high-stakes testing, test preparation, and standards)
- Increased paperwork and additional non-teaching workload demands
- Student attitudes and student disinterest in learning
- Lack of/no parental support
- Lack of/unresponsiveness of administrative support
- Low status of the profession

As indicated above, teachers who depart the profession report that the increased demands of the job (particularly the challenges of increasingly antisocial and violent student behavior and the intense challenges of high-stakes accountability testing for students) are not worth the low level of compensation for an individual credentialed at the baccalaureate level or beyond.

Another survey by Scholastic Inc. and the Council of Chief State School Officers in May 2000 found that the most effective strategies affecting the retention of experience teachers were:

- Better pay and administrator support – 83 percent
- Active role in decision-making – 73 percent
- More planning time with peers – 72 percent
- Ongoing professional development – 65 percent
- Sabbaticals for professional growth – 64 percent
- Career advancement opportunities – 57 percent

Workplace demands are particularly difficult for teachers in the early years of their careers. The traditional practice of assigning veteran teachers the most attractive schedule of classes and “easiest to teach” students continues in the schools as does the companion practice of assigning beginning teachers the least attractive schedule and “most difficult to teach” students. Unacceptable physical facilities also play a role in the poor working conditions that many teachers face. Teachers are asked to conduct classes in portable classroom units or other facilities that lack appropriate equipment and materials to help maximize student learning. Basic equipment and services that college graduates working in other professional endeavors take for granted – such as a private office cubicle and a computer and a telephone – are not routinely provided to all teachers. The lack of support from administrators, parents, and the community also contribute to the high turnover rates.

## **Conclusion**

Greatly increasing the pool of credentialed teachers in Texas could resolve the teacher shortage. However, not enough people can be attracted to the pool if the teaching profession is not perceived as a viable opportunity to pursue. The state also is not well-served in the long term by simply enlarging the pool and not addressing the high turnover rates in the profession. Filling the pool on one end while the drain is open on the other end does not make sense.

A dual approach of maintaining a sufficient pool of highly qualified teachers and of retaining experienced teachers through adequate compensation and a quality working environment must be vigorously pursued to enable Texas to provide excellence in education for all its people.

## APPENDIX A

### State Board for Educator Certification Estimates of the Teacher Shortage in Texas Public Schools For the 2000-2001 and 2001-2002 Academic Years

As Presented to the House Joint Committee on the  
State's Shortage of Educational Professionals  
June 18, 2002

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#### Introduction

There is a widespread assumption that there exists a significant shortage of teachers in public schools both across the nation and in Texas. Recent estimates put the shortage of teachers in Texas public schools between 37,000 and 40,000 teachers. However, there has been neither little examination of the specific data used in such estimates nor a detailed description of the assumptions behind the estimates. This analysis will offer a number of different estimates of the shortage of teachers in Texas public schools. Each of the estimates will be based on different definitions of teacher shortage, each of which will have different assumptions.

In the 2002 school year, there were 289,000 public school teachers in Texas. Interestingly, this was more than 50,000 greater than the number of teachers in the 1995 school year. This increase in the number of teachers was driven fairly dramatic increases in the number of students enrolled in Texas public schools as well as a decline in the student-teacher ratio over the past seven years.

While there are advantages and disadvantages specific to each of the estimates described below, all of them suffer from two common drawbacks:

*(1) Lack of good information on the actual personnel decisions by schools and school districts*

When a district has a teaching position open, they can choose to fill that position with an individual who may or may not be qualified to be in that position, or the district may simply choose to not fill the position and increase class sizes instead. For example, if a district is short one mathematics teachers when holding class sizes at 25:1, the district could simply increase the average class size rather than hire an additional teacher. The only data collected on such practices is through the Schools and Staffing Survey conducted by the National Center for Education Statistics. This data has recently been released and SBEC is in the process of obtaining access to the data. If school districts are forced to increase class size because they were unable to find a qualified teacher to hire, or simply chose not to hire another qualified teacher, then many of the following estimates would *underestimate* the true shortage of teachers.

*(2) The number of students affected by the shortage of teachers.*

At this point in time, the PEIMS data estimates the number of students taught by each teacher, but the estimate is not sufficiently precise. A scenario in which 45,000 under-qualified teachers are assigned to teach one and one half million students is quite different than one in which 45,000 under-qualified teachers are assigned to teach less than one million students.

In addition, all of the estimates employing some type of analysis of the percentage of in-field and out-of-field teaching (estimates VI through IX) have two additional common drawbacks:



(3) *Only teachers with assignments that require a teacher to hold a certificate are included in the analysis.*

Teachers may be assigned to teaching positions that do not require the teacher to hold a certificate. For example, teachers assigned to study hall, discipline management, pupil transportation, and tutorials. Teachers assigned to these areas are not included in any of estimates VI through IX. If a teacher is assigned to these areas for only part of the day, then that part of the day and the associated FTE are excluded from the analysis. One could argue that all teachers involved with students—regardless of the assignment area of the teacher and—should hold a standard certificate, including substitute teachers. However, there is currently not any requirement that such teachers hold a certificate.

(4) *Lack of data on some middle school teachers overestimates the number and percentage of teachers assigned out-of-field*

Some middle school teachers actually hold the appropriate credentials and possess the appropriate knowledge to be considered as assigned in-field, but a lack of data collection results in such teachers being described as out-of-field. Specifically, SBEC rules allow teachers that have a general elementary certificate as well as 18 hours of higher education coursework in a particular subject area to be appropriately assigned to teach that subject area in grades seven and eight. Unfortunately, no data is currently available that would identify such teachers. Thus, the magnitude of the overestimate of the number and percentage of out-of-field teachers assigned to teach middle school subject is unknown.

### **Estimate I: Vacant Classrooms (2001-2002)**

#### Description of Estimate

One way to define a shortage of teachers would be the number of classrooms without an adult to instruct the students. To the best of our knowledge, no school or school district has any classrooms that do not have an adult assigned to instruct the students. Thus, under such a definition, there currently is not a shortage of teachers.

**Shortage of Teachers: 2000-2001: 0  
2001-2002: 0**

#### Advantages and Disadvantages of Estimate

The *principal advantage* of using the *vacant classroom estimate* is that it dispels the myth that there are classrooms of students without any adult assigned to instruct the students. This simply is not the case. All schools and school districts ensure that there is an adult—certified or uncertified—assigned to instruct the students in that classroom.

The *primary disadvantage* of the *vacant classroom estimate* is that it disregards entirely the qualifications of the adult assigned to instruct the students. While every classroom of students is assigned an adult to instruct the students, not every adult so assigned is certified to be a teacher in a Texas public school. Thus, the vacant classroom estimate overlooks the shortage of certified teachers in Texas.

### **Estimate II: Number of All Certified Teachers (2000-2001; 2001-2002)**

#### Description of Estimate

Another method of defining teacher shortage is to identify the number of certified teachers available to teach. While there are currently about 290,000 teachers employed in Texas public schools, there are approximately 420,000 individuals holding valid Texas teaching certificates who are not employed in Texas public schools. Thus, there are clearly more certified teachers in Texas than there are teaching positions. Under such a definition, there currently is not a shortage of teachers.

**Shortage of Teachers: 2000-2001: 0**  
**2001-2002: 0**

Advantages and Disadvantages of Estimate

The *primary advantage* of using the *number of certified teachers estimate* is that it documents the large number of individuals holding valid Texas teaching certificates who are not employed as Texas public school teachers. This estimate clearly documents that any shortage of certified teachers in Texas public schools is *not* due to the lack of supply of certified teachers, but rather to the lack of willingness on the part of certified teachers to work in Texas public schools.

The *primary disadvantage* of the *number of certified teachers estimate* is that it documents only the number of individuals holding a certificate when what determines the supply of teachers is the number of individuals actually willing and able to be employed in Texas public schools. Thus, in economic terms, the supply of teachers is actually the number of individuals willing to teach in a Texas public school under the current conditions rather than the number of teachers with the credentials to be a certified teacher in Texas.

**Estimate III:  
 Number of Teaching Positions to be Filled before the Start of School  
 (2000-2001; 2001-2002)**

Description of Estimate

From the standpoint of some school district personnel, the shortage of teachers can be defined as the number of teaching positions needed to be filled before the start of school. These unfilled positions could be due to teacher attrition (including retirement), an increase in the number of students, or a reduction in class sizes. Across the state, the number of teaching positions that were needed to be filled to start the 2002 school year was estimated by school district personnel to be slightly under 37,000 (The Texas A&M University System Institute for School-University Partnerships, 2002).

**Shortage of Teachers: 2000-2001: 39,652**  
**2001-2002: 37,000**

Advantages and Disadvantages of Estimate

The *primary advantage* of using the *number of teaching positions to be filled before the start of school estimate* is that it documents one aspect of the shortage of teachers—namely, the number of teaching positions needed to be filled by the start of school by district personnel to staff their classrooms for the coming school year.

The *primary disadvantage* of the *number of teachers needed to be hired estimate* is that it does not examine the number of under-qualified teachers already in classrooms. *Another disadvantage* is that the estimate does not take into account the number of teachers moving from one district to another. When a teacher leaves one district, the loss of the teacher possibly creates a shortage in that particular district. However, if the teacher becomes employed in another district, then that teacher should not be counted towards an estimate of the shortage of teachers *for the entire state*. In this sense, this estimated shortage number may *overestimate* the state-level need for additional teachers.

**Estimate IV:  
Number of Teachers on Emergency Permits (2000-2001; 2001-2002)**

Description of Estimate

The shortage of teachers can also be defined by examining the number of teachers not fully qualified to be teachers. Most teachers on emergency permits typically do not hold a teaching certificate from the state of Texas. An emergency permit is granted to a person with a four-year degree but who does not hold a State of Texas Teaching Certificate or who holds a Texas teaching certificate in an area inappropriate for her or his assignment. In most cases, the person does not hold any valid Texas teaching certificate. Emergency permits are initially valid for only one school year, but can be renewed for up to two additional years depending on the total number of semester hours needed to obtain certification and documentation of progress toward certification. This definition assumes that teachers holding emergency permits are less – qualified than teachers holding standard certificates. In the 2002 school year, 14,488 individuals on emergency teaching permits were assigned to be teachers.

**Shortage of Teachers: 2000-2001: 14,440  
2001-2002: 14,488**

Advantages and Disadvantages of Estimate

The *principal advantage* of using the *number of teachers on emergency permits estimate* is that it documents the number of individuals who have not had any training to be classroom teachers with the exception of those teachers holding a standard certificate but on an emergency permit to teach out-of-field for the majority of the school day. With the exception of the teachers on an “emergency-certified” permit that allows them to teach out of field, teachers on emergency permits are the least qualified as measured by objective criteria such as passing an ExCET test or enrollment in an alternative program that provides the teacher some training.

The *primary disadvantage* of the *number of teachers on emergency permits estimate* is that it does not examine the qualifications of individuals teaching on emergency permits. At this point in time, this data is simply not available. With respect to content knowledge, some teachers on emergency permits could actually be more qualified than teachers holding a standard certificate.

**Estimate V:  
Number of Teachers Not Holding a Standard Certificate (2000-2001; 2001-2002)**

Description of Estimate

The shortage of teachers can also be defined by examining the number of teachers not holding a standard certificate issued by SBEC. Teachers without a full certificate include teachers on emergency permits, teachers entering from other states or countries on a one-year certificate, and teachers enrolled in alternative certification programs. A more detailed description of emergency permits is included in the analysis below. Teachers with an out-of-state permit are those individuals moving into Texas from another state or country. The teachers must pass the requisite ExCET examinations or have passed the licensure examinations from their own state with a score comparable to an ExCET examination passing score.

This definition assumes that those holding a standard certificate are more qualified to teach than teachers on other certificates or permits. Teachers on one-year certificates, enrolled in Alternative Certification Programs, or employed on an emergency permit have not yet exhibited their content or pedagogical expertise by passing the ExCET examinations. Most out-of-state teachers will have already had some teaching experience, but may or may not have had to exhibit their content and pedagogical expertise by taking a teacher licensure test. In the case of teachers enrolled in Alternative programs, most do not have prior training to be a teacher and vary in their content expertise. With respect to teachers on emergency permits, very few have any pedagogical training and their level of content area expertise varies.

**Shortage of Teachers: 2000-2001: 21,077**  
**2001-2002: 33,899**

Advantages and Disadvantages of Estimate

The *principal advantage* of using the *number of teachers not holding a standard certificate estimate* is that it documents the number of teachers who are not fully certified under the rules and regulations set forth by the state. Again, inherent in such an analysis is the assumption that teachers who have met all of the requirements for full certification are more qualified to instruct students than teachers who have not satisfied all of the requirements for full certification. There is fairly consistent research that content area expertise is positively associated with teacher quality as measured by student performance. In addition, there is somewhat consistent evidence that fully certified teachers possess better classroom management and organizational skills than teachers without full certification. Importantly, teachers not holding a standard certificate typically have not demonstrated their content expertise before they begin teaching.

The *primary disadvantage* of the *number of teachers not holding a standard certificate estimate* is that there is no consistent research evidence for one to unequivocally conclude that fully certified teachers are more qualified and effective than teachers holding out-of-state certificates, Alternative Certification Program certificates, or emergency permits. However, the research is fairly clear that subject matter knowledge and teacher verbal ability (as measured by standardized test results such as the verbal section of the SAT) are critical to the quality and effectiveness of teachers.

*Another disadvantage* of this estimate is that not all teachers are assigned to subjects that require a standard certificate or even a permit. For example, a teacher could be assigned to be in charge of study hall or be a permanent substitute. In the latter case, each individual district decides on the required qualifications to be a permanent substitute teacher.

*A third disadvantage* of this estimate is that the percentage of time these teachers are assigned to teach students is unknown at this time. Teachers without a standard certificate may not instruct students as great a percentage of the day as teachers with a standard certificate. The data to compete such an analysis is available, but has not been conducted at this time.

**Estimate VI:**

**Number of Teacher Full-Time Equivalents (FTEs) Assigned to Teach Out-of-Field  
 Using a Subject Area Level Analysis (2000-2001; 2001-2002)**

Description of Estimate

Another way to estimate the shortage of teachers is to document the *number of teacher full-time equivalents assigned to teach out of their field of expertise*. The assumption behind this estimate is that if a district must resort to assigning a teacher out of their field of expertise or a teacher without a standard certificate, then the district was unable to find and hire a teacher fully certified in to teach that particular subject area.

In this particular analysis, a teacher must hold a standard certificate in the subject area (e.g., English/language arts, science, etcetera) to which they are assigned to teach. For example, if a teacher is assigned to teach physics and holds any type of science certificate (i.e., chemistry, biology, physical science, etcetera), then he or she is considered to be teaching in-field. Thus, the proper certificate for an assignment is broadly defined in this estimate. In estimates VIII and IX, a more narrow analysis is considered.

Finally, the teacher must be assigned to teach out of field for more than 50 percent of the day in a particular subject area to be included in this analysis.

**Shortage of Teachers: 2000-2001: 42,237**  
**2001-2002: 47,053**

Advantages and Disadvantages of Estimate

The *primary advantage* of the *number of teachers assigned to teach out-of-field estimate using a subject area analysis* is that it documents the total FTE count of teachers who do not hold a standard certificate for the content area to which they are assigned to teach. This analysis assumes that both knowledge of content and the knowledge of how to best present and convey content are important in helping children to learn. If one agrees that both content and pedagogical knowledge are necessary to be a well qualified and effective teacher, then the number of teacher FTEs assigned out-of-field is a fairly accurate estimate of the shortage of teachers.

The *primary disadvantage* of this and other estimates is that there is currently no consistent valid research base that unequivocally concludes fully certified teachers are more effective than teachers on one-year certificates, teachers enrolled in Alternative Certification Programs, or teachers on emergency permits. One could argue that certain individuals in Alternative Certification Programs could possess a very strong and deep understanding of the content area to which he or she is assigned to teach, thus should not be considered out-of-field. However, such persons typically have not demonstrated their mastery of the subject area to which they are assigned to teach by passing the appropriate ExCET test before they enter the classroom.

Moreover, the ability of such individuals to communicate their content expertise has also typically not been assessed.

The *second disadvantage* of this estimate is that the FTEs are summed for all the FTEs out of field. In many cases, however, common and financial sense would dictate that district assign a teacher out of field for a small portion of the day. For example, suppose a district has only one Algebra I teacher available to teach five classes per day, the district wants to keep the Algebra I student-teacher ratio at or below 30 to one, and there are 180 students enrolled in Algebra I. The number of students would—given the class size limitation—require at least six classes rather than five. In such a case, the district would have several options: (1) ask the Algebra I teacher to teach an additional class for additional pay, (2) attempt to hire a certified mathematics teacher or a teacher certified in a different subject area for just one class per day, (3) hire a full-time mathematics teacher, (4) hire a full-time teacher not certified or certified in a non-mathematics subject area, (5) or assign a teacher from another field of expertise to teach the one class. Often the best option for districts—especially from a financial perspective—is to simply assign a teacher from another subject area to teach the extra Algebra I class.

**Estimate VII:  
 Number of Teachers Assigned to Teach Out-of-Field  
 More than 50 Percent of the Day Using a Subject Area Level Analysis  
 (2000-2001; 2001-2002)**

Description of Estimate

Because some teachers under the current conditions will inevitably be assigned to teach out-of field for one or two class periods per day, the *number of teachers assigned to teach out-of-field more than 50 percent of the day using a subject area analysis estimate* only considers teachers teaching out-of-field for more than 50 percent of the day when estimating the shortage of teachers.

The assumption behind this estimate is two-fold: (1) that a district should hire an additional teacher rather than assign a person out-of-field for more than 50 percent of the day and (2) that presumably the district was unable to find and hire a teacher holding a standard certificate in that particular subject area.

As in the above analysis, a teacher must hold a standard certificate in *only* the subject area to which she or he is assigned to teach to be considered in-field in this analysis. For example, if a teacher is assigned to teach physics and holds any type of science certificate (i.e., chemistry, biology, physical science, etcetera), then he or she is considered to be teaching in-field. The same is true for other subject areas, including foreign language. Thus, the proper certificate for an assignment is broadly defined in this estimate. In estimates VIII and IX, a narrower definition for holding the proper certificate is employed.

The most important aspect of this definition is that only teachers assigned to more than 50 percent of the school day are considered to be out-of-field. This allows for the assignment of some teachers to subject areas out of their field of expertise for several classes a day.

**Shortage of Teachers: 2000-2001: 40,138**  
**2001-2002: 42,808**

#### Advantages and Disadvantages of Estimate

The *primary advantage* of using the *number of teachers assigned to teach out-of-field more than 50 percent of the day using a subject area analysis* is that it documents the number of teachers assigned out-of-field, but does not include those teachers assigned out of field for only a small portion of the day. In this way, the estimate takes into account the sometimes necessary decision-making processes of school districts. Because of the way schools are currently organized and funded, there will likely be teachers who are assigned out of field for some small proportion of the day.

The *primary disadvantage* of this and other estimates is that there is currently no consistent valid research base that unequivocally concludes fully certified teachers are more effective than teachers on one-year certificates, teachers enrolled in Alternative Certification Programs, or teachers on emergency permits. One could argue that certain individuals in Alternative Certification Programs could possess a very strong and deep understanding of the content area to which he or she is assigned to teach, thus should not be considered out-of-field. However, such persons typically have not demonstrated their mastery of the subject area to which they are assigned to teach by passing the appropriate ExCET test before they enter the classroom. Moreover, the ability of such individuals to communicate their content expertise has also typically not been assessed.

The *other disadvantage* is that the estimate assumes those teachers assigned to teach out-of-field for less than 50 percent of the day do not contribute to the shortage of teachers or are considered to be well-qualified. From the standpoint of students or parents, however, a teacher assigned out-of-field for just one class a day can be extremely important, especially if the teacher does not have a strong command of the subject matter knowledge.

### **Estimate VIII: Number of Teacher Full-Time Equivalents (FTEs) Assigned to Teach Out-of-Field Using a Subject Level Analysis (2000-2001; 2001-2002)**

#### Description of Estimate

While estimates VI and VII counted the number of teachers assigned out-of-field as a method to estimate the shortage of teachers, the *number of teacher full-time equivalents assigned to teach out-of-field using a subject level analysis* is different in that it employs a narrower perspective in making the decision about whether a teacher is assigned in-field or out-of-field.

In this particular analysis, a teacher must hold a standard certificate in the subject area *and* the subject to which she or he is assigned to teach. For example, if a teacher is assigned to teach physics, then he or she must hold a science composite certificate or a physics certificate to be considered to be assigned in-field. Similarly, a

journalism teacher must have a journalism certificate to be considered in-field. Thus, the proper certificate for an assignment is defined more narrowly in this estimate than in the subject area estimate.

The assumption behind this estimate is that if a district must resort to assigning a teacher out of her or his field of expertise or a teacher without a standard certificate, then the district was unable to find and hire a teacher fully certified in to teach that particular subject area.

Furthermore, this estimate is based on the assumption that a teacher must hold the proper standard certificate for each subject that she or he teaches in order to be well-qualified. This estimate assumes that simply having a standard certificate in any subject within the subject area is not sufficient to effectively teach a subject. For example, this estimate assumes that a physics teacher with a science composite or physics certificate is better qualified to teach physics than a teacher with a biology certificate.

**Shortage of Teachers: 2000-2001: 45,155**  
**2001-2002: 56,551**

#### Advantages and Disadvantages of Estimate

The *primary advantage* of the *number of teachers assigned to teach out-of-field estimate using a subject level analysis* is that it documents the total FTE count of teachers who do not hold a standard certificate for the content area to which they are assigned to teach. This analysis assumes that both knowledge of content and the knowledge of how to best present and convey content are important in helping children to learn. If one agrees that both content and pedagogical knowledge are necessary to be a well qualified and effective teacher, then the number of teacher FTEs assigned out-of-field is a fairly accurate estimate of the shortage of teachers.

The *primary disadvantage* of this and other estimates is that there is currently no consistent valid research base that unequivocally concludes fully certified teachers are more effective than teachers on one-year certificates, teachers enrolled in Alternative Certification Programs, or teachers on emergency permits. One could argue that certain individuals in Alternative Certification Programs could possess a very strong and deep understanding of the content area to which he or she is assigned to teach, thus should not be considered out-of-field. However, such persons typically have not demonstrated their mastery of the subject area to which they are assigned to teach by passing the appropriate ExCET test before they enter the classroom. Moreover, the ability of such individuals to communicate their content expertise has also typically not been assessed.

The *second disadvantage* of this estimate is that the FTEs are summed for all the FTEs out-of field. In many cases, however, common and financial sense would dictate that district assign a teacher out of field for a small portion of the day. For example, suppose a district has only one Algebra I teacher available to teach five classes per day, the district wants to keep the Algebra I student-teacher ratio at or below 30 to one, and there are 180 students enrolled in Algebra I. The number of students would—given the class size limitation—require at least six classes rather than five. In such a case, the district would have several options: (1) ask the Algebra I teacher to teach an additional class for additional pay, (2) attempt to hire a certified mathematics teacher or a teacher certified in a different subject area for just one class per day, (3) hire a full-time mathematics teacher, (4) hire a full-time teacher not certified or certified in a non-mathematics subject area, (5) or assign a teacher from another field of expertise to teach the one class. Often the best option for districts—especially from a financial perspective—is to simply assign a teacher from another subject area to teach the extra Algebra I class.

#### Description of Estimate

A final method to estimate the shortage of teachers is to document the *number of teachers assigned to teach out of their field of expertise for more than 50 percent of the day*. The assumption behind this estimate is two-fold: first, that a district should hire an additional teacher rather than assign a person out-of-field for more than 50 percent of the day and, second, that the district was unable to find and hire a teacher fully certified in to teach that particular subject area.

In this particular analysis, a teacher must hold a standard certificate in the subject area *and* the subject to which they are assigned to teach. For example, if a teacher is assigned to teach physics, then he or she must have a science composite certificate or a physics certificate to be considered to be assigned in-field. Thus, the proper certificate for an assignment is defined more narrowly in this estimate than in the subject area estimate.

In addition to teachers holding a standard certificate inappropriate for the subject area to which the teacher is assigned, all teachers on one-year certificates, teachers enrolled in Alternative Certification Programs, and teachers on emergency permits are considered to be out-of-field in this estimate. For a complete review of how this analysis was conducted, see the *Who is Teaching* reports on the SBEC website.

The most important aspect of this definition is that only teachers assigned to more than 50 percent of the school day are considered to be out-of-field. This allows for the assignment of some teachers to subject areas out of their field of expertise for several classes a day.

**Shortage of Teachers: 2000-2001: 41,197**  
**2001-2002: 50,381**

#### Advantages and Disadvantages of Estimate

The *primary advantage* of using the *number of teachers assigned to teach out-of-field more than 50 percent of the day using a subject level analysis* is that it documents the number of teachers assigned out-of-field, but does not include those teachers assigned out of field for only a small portion of the day. In this way, the estimate takes into account the sometimes necessary decision-making processes of school districts. Because of the way schools are currently organized and funded, there will likely be teachers who are assigned out of field for some small proportion of the day.

The *primary disadvantage* of this and other estimates is that there is currently no consistent valid research base that unequivocally concludes fully certified teachers are more effective than teachers on one-year certificates, teachers enrolled in Alternative Certification Programs, or teachers on emergency permits. One could argue that certain individuals in Alternative Certification Programs could possess a very strong and deep understanding of the content area to which he or she is assigned to teach, thus should not be considered out-of-field. However, such persons typically have not demonstrated their mastery of the subject area to which they are assigned to teach by passing the appropriate ExCET test before they enter the classroom. Moreover, the ability of such individuals to communicate their content expertise has also typically not been assessed.

The *other disadvantage* is that the estimate assumes those teachers assigned to teach out-of-field for less than 50 percent of the day do not contribute to the shortage of teachers or are considered to be well-qualified. From the standpoint of students or parents, however, a teacher assigned out-of-field for just one class a day can be extremely important, especially if the teacher does not have a strong command of the subject matter knowledge.



## **Conclusion**

The nine estimates above provide different perspectives on the shortage of teachers in Texas. The estimates range from 0 to 56,500. On average, estimates V through IX document that the shortage of teachers is between 10 and 20 percent of the current number of public school teachers (289,000 in 2002). This translates into a shortage of between 29,000 and 58,000 teachers, depending on the estimate. In general, one can fairly safely assume that the shortage of teachers is approximately 45,000 for the 2001-2002 academic year. Moreover, the shortage of teachers has increased from the 2000-2001 to 2001-2002 school year. The average estimate for the shortage of teachers in 2000-2001 was approximately 40,000 teachers.

## **APPENDIX B**

### **Acknowledgments and Resources**

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Texas Business and Education Coalition

Texas Classroom Teachers Association

Texas Education Agency

Texas Higher Education Coordinating Board

Texas School Public Relations Association

Texas State Teachers Association

Texas State University System

Texas Workforce Commission

The University of Texas at Austin

Tyler Junior College

University of Houston at Clear Lake

University of North Texas

University of Texas System

## RESOURCES

- A Guide to Today's Teacher Recruitment Challenges*, published in 2000 by Recruiting New Teachers.
- A Report on Promising Practices for the Recruitment and Completion of Educator Preparation Programs*, a report published in 2002 by the Texas Higher Education Coordinating Board.
- Closing the Gaps by 2015*, published in 2000 by the Texas Higher Education Coordinating Board.
- Educator Recruitment, Preparation, and Retention Initiatives for 2000-2001*, adopted by the Texas Higher Education Coordinating Board in July 2000.
- Educator Recruitment, Preparation, and Retention Initiatives for 2001-2002*, adopted by the Texas Higher Education Coordinating Board in October 2001.
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- Excellent Teachers for All Texas Schools*, a report by the Sid W. Richardson Foundation Forum, 2001
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- Helping State Leaders Shape Education Policy*, teaching quality issues reports published in 2002 by the Education Commission of the States
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- Investing in Teaching*, a report developed by The Business Roundtable, National Alliance of Business, National Association of Manufacturers and U.S. Chamber of Commerce, and published by the National Alliance of Business in 2001.
- No Child Left Behind Act*, federal legislation signed into law by President George W. Bush in January 2002.
- Proceedings of the 1999 Texas Teachers Forum*, published by The Partnership for Texas Public Schools: A Cooperative of the Texas A&M University System and the Texas Education Agency.
- Quality Teaching for Quality Education*, a report prepared for the Texas Teacher Recruitment and Retention Project in 2002.
- Texas Teacher Recruitment and Retention Study*, a project of the Texas Education Agency, the Texas Higher Education Coordinating Board, and the State Board for Educator Certification, published in 1999.

**Resources, continued**

*Proceedings of the 2000 Texas Teachers Forum*, published by The Partnership for Texas Public Schools: A Cooperative of the Texas A&M University System and the Texas Education Agency.

*Teacher Demand Study, 2000-2001*, prepared for the Texas A&M University System, Texas Education Agency, and Partnership for Texas Public Schools, published in 2001.

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*Who is Teaching in Texas Public Schools? An Analysis of In-field and Out-of-Field Teaching in the 2000-2001 Academic Year*, a report published in 2002 by the State Board for Educator Certification.

# TEXAS STRATEGIC PLAN TO ADDRESS THE TEACHER SHORTAGE

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