

8-2008

Science and Mathematics Alliance for Recruiting and Retaining Teachers (SMARRT): Addressing the Teacher Shortage in At-Risk Schools

Denise Staudt
University of the Incarnate Word, USA

Michael Risku
University of the Incarnate Word, USA

Elda Martinez
University of the Incarnate Word, USA

Follow this and additional works at: <https://ro.ecu.edu.au/ajte>



Part of the [Science and Mathematics Education Commons](#), and the [Teacher Education and Professional Development Commons](#)

Recommended Citation

Staudt, D., Risku, M., & Martinez, E. (2008). Science and Mathematics Alliance for Recruiting and Retaining Teachers (SMARRT): Addressing the Teacher Shortage in At-Risk Schools. *Australian Journal of Teacher Education*, 33(4).
<http://dx.doi.org/10.14221/ajte.2008v33n4.5>

This Journal Article is posted at Research Online.
<https://ro.ecu.edu.au/ajte/vol33/iss4/5>

Science and Mathematics Alliance for Recruiting and Retaining Teachers (SMARRT): Addressing the Teacher Shortage in At-Risk Schools

Dr. Denise Staudt

Dr. Michael Risku

Dr. Elda Martinez

University of the Incarnate Word, USA

Abstract: The Science and Mathematics Alliance for Recruiting and Retaining Teachers (SMARRT) is a collaborative partnership pursuing aggressive strategies to recruit high quality minority teachers to teach in high-need schools in urban school districts. This partnership is dedicated to recruiting, preparing, and retaining high quality teachers with strong academic content knowledge in science and/or mathematics and a wide repertoire of research-based teaching practices including ESL strategies. The SMARRT project is designed to allow urban school districts experiencing severe shortages in mathematics, science and ESL teachers to create a pipeline of highly qualified teachers by partnering with the university to recruit, prepare, and retain teachers in high need schools. Insights, concerns, and implications for teacher education related to the SMARRT project are addressed.

Despite all the educational reform activity over the past three decades, our nation currently faces one of the most daunting challenges in recent history. According to the latest U.S. Department of Education reports, the nation is facing an impending teacher shortage, especially in specific high need areas. In addition, a report by the American Association for Employment in Education, *Educator Supply and Demand in the United States* (2004), cites that current shortages of qualified teachers are most severe in traditional high-demand areas of special education, mathematics, science, bilingual education, and technology education—and it will worsen in the coming years. With student enrollments rising rapidly and more than a million veteran teachers nearing retirement, experts predict that over the next ten years the nation will need 2.2 to 2.4 million more teachers. (U.S. Department of Education, Office of Postsecondary Education, 2005).

The demand for teachers is rising rapidly which is greatly accelerating the gap between supply and demand. However, shortages are not in every region or school districts, and the shortages do not affect all communities equally. Teacher shortages are particularly acute in urban areas, where there is an immediate need to fill teaching positions in mathematics, science, and special education (National Comprehensive Center for Teacher Quality, 2006).

According to data from urban school districts, these districts face unique challenges because of rapidly growing student enrollments, accelerating rates of teacher retirement, class size reduction initiatives and demanding working conditions. Urban schools nationwide also educate between 40% and 50% of the students who are not proficient in English, about 50% of minority students, and 40% of the country's low-income students. Schools in urban areas also

contend with the lowest levels of student achievement, the highest dropout rates, and a disproportionate percentage of students with special needs (Lippman, Burns, and McArthur, 1996). According to a comprehensive study of the largest urban school districts in 2000, nearly 98% of responding districts noted an immediate demand for science teachers and 95% reported an immediate demand for mathematics teachers (Urban Teacher Collaborative, 2000). This need for math and science teachers has existed for more than three decades. Teacher education programs are not able to either recruit enough future math and science teachers or predict those future teachers who will remain teaching (Pullen, 1999). The severe shortage of qualified mathematics and science teachers comes just when the expectations for what students should know in these subjects are rising (Urban Teacher Collaborative, 2000).

The Urban Teacher Challenge report in 1996 asserted that, “without improved teacher recruitment and development practices, this nation will fail to build a qualified, diverse, and culturally sensitive teacher workforce that today’s and tomorrow’s classrooms demand.” (Urban Teacher Collaborative, 2000, p.6). Unfortunately, improved teacher recruitment and development practices have not changed almost a decade later, particularly in urban districts in the areas of mathematics and science. A study by the National Commission on Mathematics and Science Teaching for the 21st Century (2000) found that more than one in four high school mathematics teachers and nearly one in five high school science teachers lack even a minor in their teaching field. This extremely concerns educators, since we live in a society where the need for mathematics and science knowledge has penetrated virtually every aspect of life. It is indisputable that our urban schools, as a whole, are failing to provide the solid mathematics and science foundation our students require and deserve. According to the Trends in International Mathematics and Science 2003 Study (TIMSS), the nation’s fourth graders have stagnant scores and are slipping behind international peers in mathematics and science. Several countries, particularly in Asia, continue to outperform the United States in science and math, fields at the heart of research, innovation and economic competitiveness.

One of education’s challenges in the mist of a severe teacher shortage is providing quality teaching in our nation’s underperforming urban schools. This shortage is not the result of teacher supply, but instead as a result of teachers simply choosing not to teach in these schools or of teacher turnover as many teachers depart these schools after a short period of time (Ingersoll, 2003). According to the report, *Qualified Teachers for At-Risk Schools: A National Imperative* (2005), “few challenges facing America today are as critical as improving the educational attainment of poor and minority children”. At-risk schools tend to serve a high proportion of minority students, students from low-income families, English as a Second Language students, and at-risk students. They also have relatively few-well qualified teachers, persistent low achievement and graduate rates and are found most often in urban districts. Teachers in such schools tend to have temporary or emergency certification, lack subject-matter knowledge or are inexperienced (National Partnership for Teaching in At-Risk Schools, 2005).

The shortage of teachers is more pronounced in districts that offer lower salaries and less attractive working conditions. Ingersoll (1999) reported that teachers of students in at-risk schools are far more likely to be poorly trained in the subject they teach than teachers in more affluent schools. Specifically, he found that more mathematics, science, English, and social studies teachers in high-poverty schools lack a major or minor in their teaching field. Consequently, teacher turnover is a greater concern in such districts. Teachers may choose to transfer to other campuses or districts, or leave the profession entirely. While there may be challenges in entering any profession, and challenges particular to teaching, an awareness of

these issues may lead to improvements in teacher preparation, and accordingly, teacher retention. Teachers who have a strong content foundation, possess strategies for working with a culturally and academically diverse student population, and have support during the induction period are more likely to remain in the classroom.

With rising academic standards, increasing use of standardized assessments and growing numbers and diversity of English language learners in the at-risk elementary schools, teachers prepared in English as a Second Language (ESL) strategies are desperately needed. Of particular concern is the profound shortage of qualified teachers of English language learners (ELL); a situation demanding particular attention considering that the ELL population is now the fastest-growing K-12 population. The shortage of qualified teachers is most extreme in urban areas, where between 40% and 50% of English Language Learners reside (21% of all urban public school students are English language learners) (Barron & Menken, 2002). In their survey of large city school districts and colleges of education, the Urban Teacher Collaborative (2000) found that 67.5% reported an immediate shortage of ESL teachers. School districts in Texas reported a shortage of 2,906 teachers in the elementary bilingual/ESL area for the 2001-2002 school year (Texas A&M University, 2002). While there is a shortage across grade levels in urban schools, the demand for ESL teachers is greatest at the elementary level.

There is also a need to increase the diversity of the teaching force that has the skills to work with the growing minority student population in urban districts. Eric Hirsch (2001) summarized data presented in the report, *Teacher Recruitment: Staffing Classrooms with Quality Teachers*. He explained that about 42% of all public schools in the United States have no minority teachers. Yet minority students make up about 33% of enrollment in public schools while the total of minority teachers reaches just 13.5%. The drop out rate of minority students is considerably higher for minority students on a national front; the impact greater in states such as Texas where the minority population is greater. Of the many reasons for such, the lack of minority teachers in the public schools has been cited as a contributing variable (Salinas, 2000).

Studies on the impact of minority teachers on minority student performance indicate a positive correlation. Benefits of such a teaching relationship, particularly in urban areas where the majority of the student population is comprised of minority students, include: understanding of cultural, language and community differences; improved communication between teachers and parents; and may be able to help students overcome language barriers. Additionally, minority teachers serve as role models for minority students and majority students alike. It is generally accepted that increasing the numbers of minority teachers will lead to an increase in minority students' academic performance and will consequently impact the drop out rate (Salinas, 2000; Gay, Dingus & Jackson, 2003).

The need for qualified Hispanic teachers, particularly in the state of Texas, is also well documented. The Texas teaching force is far from matching the diversity of the student body of the schools. The Texas PK-16 report for 2002-03 indicates that of the total 349,419 teachers in Texas, only 77,718 were Hispanic (22%). At the same time, the Texas Education Agency *Public Education Information Management System report for 2002-2003* indicates that Hispanic students make up 44% of the student population in Texas schools. The growing gap between the teaching force and the student population is alarming. If knowledge of science and mathematics is the door to modern technology and progress, then Hispanic children in Texas' urban districts must have Hispanic teaching models in these areas.

Addressing the Teacher Shortage in At-Risk Schools

The Science and Mathematics Alliance for Recruiting and Retaining Teachers (SMARRT), a collaborative partnership based in San Antonio, Texas is pursuing aggressive strategies to recruit, prepare, and retain elementary and secondary minority teachers to teach in high-need schools in San Antonio's urban school districts. This project is funded by the U.S. Department of Education through the Teacher Quality Enhancement Grants program, Title II of the Higher Education Amendments of 1998.

The SMARRT initiative was designed to create and disseminate new and promising strategies to increase the pipeline of highly qualified minority teachers in the areas of mathematics, science and ESL. This project allows urban districts experiencing severe shortages in mathematics, science and ESL to hire highly qualified teachers by partnering with a teacher preparation program and faculty from the areas of mathematics and science.

Additionally, the SMARRT program provides a comprehensive induction model that supports program teacher candidates as they complete coursework, enter the classroom as novice teachers, and as they complete their first two years of independent teaching. This support is imperative in addressing the retention initiative. The August 2005 issue brief published by the Alliance for Excellent Education reinforces the importance of a comprehensive model of support as teachers enter their induction period into the teaching profession. Their findings report data determining that the attrition rate of new teachers can be decreased significantly, by half, if comprehensive induction is provided. Such a model includes, "a combination of high-quality mentoring, professional development and support, scheduled interaction with other teachers in the school and in the larger community, and formal assessments for new teachers during at least their first two years of teaching." (Smith & Ingersoll, 2004 as cited by the Alliance for Excellent Education, p.3).

SMARRT Partners

Since the mid 1980's, teacher preparation programs across the nation have been organizing new relationships with school districts for the initial and continuing education of teachers. These programs are usually called professional development schools, partner schools, clinical schools or professional practice schools (Zeichner, 2005). Public school/university partnerships provide an excellent vehicle for teacher training. The SMARRT project represents a unique collaborative effort among the following partners in the San Antonio area: The University of the Incarnate Word; San Antonio Independent School District; Harlandale Independent School District; Northside Independent School District; South San Antonio Independent School District; Somerset Independent School District; Northwest Vista Community College's Department of Natural and Physical Sciences and the University of Texas Marine Science Institute.

The University of the Incarnate Word (UIW), the lead institution for the project, is the largest Catholic university in Texas with an overall enrollment in 2007 of 6,007 students, surpassing last year's total by just over 600 students. The student population reflects the ethnic diversity of the community the institution serves, as 69% of students represent minority populations (54% Hispanic, 31% White non-Hispanic, 7% African-American, 3 % Asian, and 5% international). Sixty-five percent of the students at the university are female. Currently,

many of the “traditional” UIW students are first-generation college students – that is, the first one in his or her family to attend college.

SMARRT Project Activities

The SMARRT project is in the second year of implementation. The purpose of the project is the transformation of the teacher education program at the university into a collaborative effort among PK-12 schools, institutions of higher education, and other stakeholders in the San Antonio area. Through the activities of the collaborative, all stakeholders have a voice in the development of the program, have shared responsibility for successes of the program, and contribute to its success. In a comprehensive effort to recruit, prepare, and retain high quality minority teachers to teach in high-need urban school districts, several activities are underway to accomplish the objectives of the SMARRT project.

Data Collection and Analysis of Teacher Supply and Demand in the Schools

The critical needs of school districts are central to any teacher recruitment effort. One of the keys to addressing the long-term aspects of the teacher shortage is to develop a systematic procedure for collecting information relative to the teacher supply and demand of surrounding districts. The SMARRT project created a database to track the needs of area schools and to analyze the information provided by the schools to target needs and actively recruit candidates in the areas of need. The project provided leadership in responding to the changing needs for teachers from underrepresented populations, in critical subject fields, and in under-served geographical areas by sharing up-to-date and relevant information concerning teacher shortage areas in San Antonio. This information is posted on its recruiting web site for potential candidates, other teacher preparation programs and other school districts to utilize. Effective recruiting strategies are also advertised on the web site so that all teacher preparation programs in the San Antonio area are able to use the information to expand their recruiting efforts to address the district’s needs.

Recruitment of Teachers, Particularly Hispanic Teachers

There is an urgent need to recruit and retain minority teachers and states are implementing a variety of programs and policies that complement traditional recruitment efforts (National Collaborative on Diversity in the Teaching Force, 2004). Recruitment strategies targeting minority students can play a major role in providing diversity in the teaching force.

The Office of Graduate Studies and Research and the Admissions Office at UIW currently recruits students for the Dreeben School of Education through local newspaper advertisements and information nights. To expand these recruitment initiatives, the graduate representative for education, in collaboration with the Project Director and Project Coordinator, developed new initiatives to recruit minority candidates from other universities, businesses, and organizations. The recruitment initiatives included developing partnerships and collaborating with Hispanic organizations, identifying businesses in the community and making initial contacts, utilizing websites such as HispanicOnline.com, HispanicMagazine.com, and

HispanicTrends.com to publicize scholarship and teaching opportunities. In addition, advertisements targeted at minority students were placed in minority publications, on radio stations, and in newspapers.

In order to recruit highly qualified, minority candidates to become teachers in partner schools, the SMARRT project created a recruitment web page linked to UIW's web site. This web page was designed to promote the teaching profession and to target recent college graduates, mid-career professionals, and retired military personnel from members of minority or historically disadvantaged groups for jobs in urban high-need schools. This site publicizes the availability of scholarships and other assistance for students to complete Texas Teacher Certification in the areas of mathematics and science.

Create an Innovative Program to Recruit Science and Mathematics Majors into the Teaching Profession

Through collaboration with the community colleges in San Antonio, the partners of SMARRT recruited twenty science, mathematics, and education students from the community colleges in the San Antonio area into a structured program to highlight mathematics and science content through seminars and field trips with content experts, university professors, and intern teachers. The content experts held seminars for the community college students before each of three field trips on the campus of the university. These seminars focused on the teaching of mathematics and science content specific to the planned field trip. The university professors and interns facilitated the trips with the community college students to the University of Texas Marine Science Institute in Port Aransas, the Johnson Space Center in Houston, and the McDonald Observatory in West Texas.

These field trips were valuable learning experiences that assisted the community college students in gaining a better understanding of the mathematics and science principles and concepts developed in the college classroom. These field trips were unique learning opportunities for the community college students to experience mathematics and science through the eyes of teachers as they facilitate the trips. The content experts, university professors, and teachers' passion for the content hopefully will inspire some of the students to become interested in teaching as a profession. In year three of the SMARRT project, the partners will again recruit twenty science, mathematics, and education students from the community colleges in the San Antonio area and repeat the Community College SMARRT project experiences.

Increase the Number of Math, Science and ESL Teachers

The vision for the SMARRT project is that preservice teachers and inservice teachers in the project will have the knowledge, skills, and support needed to ensure that all children can learn at high levels. During the first year of the project, fifty students were awarded full scholarships to complete a Masters of Arts in Teaching degree and obtain Texas Teacher Certification. The Texas Teacher Certification was in the area of secondary mathematics, secondary life science or elementary with a concentration in mathematics and science. In return for scholarships, these students agreed to teach in the high-need schools for a period equal to the period of time they received scholarships in the SMARRT program. The university and the partner school districts will continue the support system for the students during these years. During the second year of the project, an additional fifty students were awarded full scholarships

to complete a Masters of Arts in Teaching degree and Texas Teacher Certification. In addition to the students seeking initial teacher certification, twenty-two inservice teachers in local high-need schools received scholarships to complete an English as a Second Language (ESL) Texas certification program. These teachers also agreed to teach in the high-need schools for at least one year after certification.

Implement an Accelerated, Fast-Track, Field-Based Program Leading to a Masters of Arts in Teaching and Teacher Certification

In the last decade, alternative teacher certification has evolved as a respectable concept and has spawned many new avenues whereby individuals who already have at least a bachelor's degree can enter teaching. The SMARRT project created an alternative route to teacher certification by developing an accelerated, field-based program that fast-tracked the placement of students in K-12 urban high-need partner schools during the first year of the preparation program. This program meets the state standards and competencies and was divided into four parts: Program Acceptance, Initial Content Courses, Content and Initial Pedagogy courses and field placements, and Internship/Student Teaching.

The Dreeben School of Education faculty, in collaboration with its partners, revised the teacher preparation curriculum at the Masters level to include new content courses focused on the Texas Examination of Educator Standards (TExES) in mathematics and science and the K-12 Texas Essential Knowledge and Skills (TEKS) for mathematics and science, the Texas statewide public school curriculum. In addition, education courses were redesigned to give students more clinical experiences and help them develop more culturally responsive ways to teach urban, at-risk students. These courses help the students connect what they are learning in the education courses to how they will use that knowledge when teaching their future students in high-need schools.

Design and Implement Technology-Rich, Curriculum-Based Institutes Aligned with State Standards and the Needs of K-12 Teachers

Today's classrooms demand that beginning teachers possess the necessary skills to integrate technology into the curriculum and maximize engaged learning. While several recent reports suggest that the nation's teacher preparation programs are preparing teachers who are proficient in technology usage, these same reports suggest that beginning teachers are lacking the knowledge and skills in the use of technology to achieve the instructional objectives of the classroom (Grabe & Grabe, 2007). Teacher preparation programs must increase the level of technology integration in the curriculum and prepare new teachers for future learning environments.

To this end, the SMARRT project designed an innovative summer institute to infuse technology into the teaching experience. The goal of the summer institute is to train K-12 interns and update university faculty in effectively incorporating technology into teaching. The Southwest Educational Development Laboratory (SEDL) curriculum was used to design the summer institute. This curriculum is based on constructivist principles and according to SEDL, constructivism provides a framework for using technology in productive and interesting ways to support student learning. In a constructivist classroom, the learner is immersed in an

environment that supports the way they learn. A constructivist learning environment encourages students to engage in the active process of creating, rather than only acquiring knowledge (South Central Regional Technology in Education Consortium, 2002). The summer institute was also designed to allow faculty opportunities to assist teachers as they infuse technology into practical units for actual use in their upcoming fall semester. These units are in the mathematics and/or science areas and incorporated state curriculum standards and state and national technology standards. During the teaching experience in the fall, the teachers will teach the units in their classrooms.

Implement a Collaborative, Research-Based Support System

Each year a large number of new graduates enter teaching with the potential to be highly qualified teachers. However, the number of new teachers who leave in the first few years of teaching is alarmingly high. About one third of new teachers leave the profession within five years (Darling-Hammond, 2003). The turnover rate for teachers working in high poverty schools is 50 percent more than in low poverty schools (Ingersoll, 2001). Darling-Hammond (2003) argues that the high attrition rate in high poverty schools is due to lower salaries, fewer resources, poorer working conditions, and the stress of working with children and families who have a wide variety of needs. Some other reasons new teachers in high poverty schools leave the profession are feelings of isolation and frustration, lack of support, and lack of practical classroom knowledge (Ingersoll, 2002). The proliferation of choice and voucher programs, charter and magnet schools, and the privatization of educational delivery systems for profit, (see neo-liberalism) has arguably created a resegregation of urban public schools. These poorer urban schools have the highest need for highly qualified math and science teachers, yet they are also the schools that new teachers often find their first teaching position. Therefore, the new teacher not only faces the challenges of being a new teacher, but also must face the social challenges of the economically disadvantaged. To assist these new teachers and schools, the SMARRT project created a Beginning Teacher Support System to help retain the SMARRT beginning teachers in high-need urban schools. The Beginning Teacher Support System consists of: 1) a mentoring and a support team component, 2) a professional development component, 3) an advising component, and 4) a tutoring component.

As part of the mentoring and support team component, the project utilized the framework established in the Texas Beginning Educator Support System (TxBESS). TxBESS is a statewide program targeted at retaining Texas beginning teachers by providing the instructional and mentor support during the first years of teaching. This initiative of the Texas State Board for Educator Certification offers a comprehensive program of support, training, and formative assessment to assist beginning teachers in Texas schools. The TxBESS Evaluation Report for Year Three (2001-2002) suggests that TxBESS positively affected teacher retention, and that beginning teachers believed the support provided by the program was an important factor in their overall satisfaction with teaching. TxBESS is designed to provide a systematic support system for beginning teachers in their first and second years on the job (Dana Center, 2002).

During the second and third year of the SMARRT project, the support team will utilize an e-mentoring version of the TxBESS system and will tailor it to the urban and rural high-need schools. The support teams involved consist of experienced educators from UIW's teacher preparation program and experienced teachers who serve as mentors in the schools.

As part of the professional development component, The SMARRT project created communities of learning where teachers get continuing, collegial contact, peer reinforcement, and input from experts to sharpen their skills and deepen their subject knowledge. These professional development groups, consisting of mentor teachers, university faculty, teachers and interns meet monthly to discuss issues relevant to needs of teachers of science and math in grades K-12 high-need schools. Sessions are presented by district and community representatives to identify strategies and resources available to novice and experienced teachers. Additionally, this model provides a transition from college coursework learning to professional development.

The advising and tutoring component of the support system is coordinated through the Certification Officer and the TExES Coordinator at UIW in coordination with the SMARRT Project Director and the SMARRT Project Coordinator. The Certification Officer assists students in advising, registering for classes, following degree plans, following certification plans, and applying for certification. This is an ongoing process with each student. The TExES Coordinator assists students in preparing for the state exams through analysis of individual assessment data, tutoring, providing resources for the state exams, practicing for the state exams, and registering for the state exams. The TExES Coordinator also conducts both individual and group review sessions to prepare students for the certification exams.

Discussion of the SMARRT Project

The first year evaluation of the SMARRT project conducted by the Intercultural Development Research Association concluded that the SMARRT project was on target and moving toward the established goals set forth in the proposal. In the second year, the project is making great strides toward accomplishing the goals of the project. The recruitment, preparation, and retention model set forth by the SMARRT project is being refined and will eventually become a successful, transferable model for recruiting, preparing and inducting new teachers into the teaching profession.

The SMARRT recruitment efforts of the model were very successful in recruiting minority students. Of the candidates who applied for scholarships for Cohort One, 63% were minority candidates and, of the fifty candidates selected for scholarships, 54 % were minority students. Of the ninety-one candidates who applied for the Cohort Two scholarships, thirty-six candidates were white, forty-six candidates were Hispanic, seven candidates were African American and two candidates were Asian. A total of fifty-two students were awarded scholarships for Cohort Two (20 white, 29 Hispanic and three African American). For Cohort 1 and Cohort 2, the current enrollment is 88 students (35 white students, 43 Hispanic students, 9 African American students, and 1 Asian student). Therefore, minority students represent 62% of all scholarship recipients and Hispanic students represent 51% of scholarships awarded.

Due to some early attrition in the program, fifty-one students were awarded scholarships for Cohort One and fifty-two students were awarded scholarships for Cohort Two. However, of the fifty students that started in Cohort One, only forty-four remain in the program. Of the fifty-two in Cohort Two, five left the program by the end of the spring semester. Attrition from the program occurred due to personal obligations, unrealistic expectations of a graduate program and/or failure to meet requirements. The project has also awarded scholarships to twenty-two teachers in high-need schools for coursework in English as a Second Language.

One of the most encouraging recruitment activities of the SMARRT project was the Community College activities. These activities were well attended and resulted in great collaboration between the community colleges and the university. In addition, the pre and post surveys given to the participating students indicated that all twenty students' perception of the teaching profession improved as a result of the seminars and field trips and more than half of the students indicated that they might consider teaching as a career.

The preparation component of the model was also very successful. The Dreeben School of Education faculty, in collaboration with its partners, revised the teacher preparation curriculum at the masters level to include new content courses focused on the Texas Examination of Educator Standards (TExES) in mathematics and science and the K-12 Texas Essential Knowledge and Skills (TEKS) for mathematics and science, the statewide public school curriculum. Education courses were also redesigned to give students more clinical experiences and help them develop more culturally responsive ways to teach urban students.

One major obstacle for implementing the SMARRT project in the proposed timeline and the completion of the master's degree and certification has been the completion of the TExES certification exams which impacts the student's ability to become an intern in a school district. Unless the certification exam is passed, these students are not considered highly qualified by *No Child Left Behind*, and the public school districts will not hire them as interns. While the content skills and competencies comprised twelve semester hours of the Masters of Arts in Teaching program, approximately one-third of the overall program, several students had problems with the mathematics and/or science content exam prior to the beginning of their anticipated internship year. Additional courses and extra review sessions are being added to the program. Currently, 80% of the students in Cohort One have passed the TExES content certification examination and 61% of the students in Cohort Two.

Given the current teacher shortage, teacher retention is critical. There is evidence that comprehensive induction programs have a positive impact on teacher retention, costs, teacher quality, and student learning (American Association of State Colleges and Universities, 2006). The SMARRT retention component of the model, while still in the early stages, is showing significant promise in providing the support needed for beginning teachers. Fourteen SMARRT students completed the program in August, 2007 and are all employed in a high-need schools. Three additional students will complete the program in December, 2007 and will be seeking jobs in January. It is hoped that all students from Cohort One and Cohort Two will have teaching jobs in high-need urban schools by fall 2008. The support system will remain in place for all these teachers for three years. The results of this support system will be evaluated throughout the project and beyond.

Implications for Teacher Education

The SMARRT project constitutes a forum where its partners gather to coordinate, dialogue, and disseminate the effective practices created in the program. Throughout the grant period, new school partners will be added and technical support provided to continue to build the collaborative. Assistance is also being provided to other teacher preparation programs to build partnerships and provide recruiting strategies. The project hopes to add to the teacher recruitment and mentoring research currently underway in Texas and provide insight into an alternative approach to the current system. In addition, any data collected from the SMARRT

project that increases the number of skilled math and science minority teachers working with children in high-need areas will be disseminated to the State Board of Educator Certification in Texas and other teacher preparation entities.

The SMARRT project has provided opportunities for the partners to demonstrate vision and optimism about the teacher shortage, particularly in the shortage areas of mathematics and science. The recruitment, preparation, and retention model set forth by the SMARRT project will hopefully play a part in shaping future efforts to address the teacher shortage and retention problem in Texas.

References

- American Association for Employment in Education (2004). *Education Supply and Demand in the United States*. Columbus, Ohio: Author.
- Barron, V. & Menken, K. (2002). *What are the characteristics of the bilingual education and ESL teacher shortage?* Washington, D.C: National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs.
- Dana Center (2002). *Texas Beginning Educator Support System: Evaluation report for year three*. Austin, TX: State Board for Educator Certification.
- Darling-Hammond, L. (2003). Keeping good teachers: Why it matters, what leaders can do. *Educational Leadership*, 60(8), 6-13.
- Gay, G., Dingus, J. & Jackson, C. (2003, March). *The presence and performance of teachers of color in the profession* (a monograph). Washington, D.C.: Community Teachers Institute.
- Grabe, M. & Grabe, C. (2007). *Integrating technology for meaningful learning*. New York: Houghton Mifflin Company.
- Hirsch, E. (2001). *Teacher recruitment: Staffing classrooms with quality teachers*. Denver, CO: State Higher Education Executive Offices.
- IEA's TIMSS 2003 International Report on Achievement in the TIMSS International Study Center (2004). Chestnut Hill, MA: Boston College.
- Ingersoll, R.M. & Smith, T.M. (2003). The wrong solution to the teacher shortage. *Educational Leadership*, 60(8), 30-33.
- Ingersoll, R. M. (1999). The problem of underqualified teachers in American secondary schools. *Educational Researcher*, 28(2), 26-37.
- Ingersoll, R. M. (2001). *Teacher turnover, teacher shortages, and the organization of schools*. Washington, D.C: Center for the Study of Teaching and Policy.
- Lippman, L., Burns, S. & McArthur, E. (1996). *Urban schools: The challenge of location and poverty*. Washington, D.C: Department of Education National Center for Education Statistics.
- National Collaborative on Diversity in the Teaching Force (2004). *Assessment of diversity in American teaching force: A call to action*. Washington D.C: National Education Association.
- National Commission on Mathematics and Science Teaching for the 21st Century (2000). *Before it too late: A report to the nation from the National Commission on Mathematics and Science Teaching for the 21st Century*. Washington, D.C. Education Publications Center: Author.
- National Commission of Teaching and America's Future (2002). *Unraveling the "teacher shortage" problem: Teacher retention is the key*. Washington, D.C: Author.

- National Comprehensive Center for Teacher Quality (2006). *Key issues: Recruiting quality mathematics, science, and special education teachers in urban schools*. Washington D.C. Learning Point Association: Author.
- National Partnership for Teaching in At-Risk Schools (2005). *Qualified teachers for at-risk Schools: A national imperative*. Washington, D.C: Author.
- Pullen, S. (1999). Economic and policy determinants of science teacher supply. *Journal of Research in Science Teaching*, 35(7), 745-755.
- Salinas, J. (2000). *The effectiveness of minority teachers on minority student success*. Houston, TX: Proceedings of the National Association of African American Studies & National Association of Hispanic and Latino Studies. (ERIC Document Reproduction Service No. ED455235)
- South Central Regional Technology in Education Consortium (2002). *Active learning with technology*. Austin, Texas: Southwest Educational Development Laboratory.
- The Urban Teacher Collaborative (2000). *The urban teacher challenge: Teacher supply and demand in the great city schools*. Washington, D.C: National Teacher Recruitment Clearinghouse.
- Texas A & M University Institute for School University Partnerships (2002). *Teacher demand study 2001-2002*. Byran, TX.
- Texas Education Agency (2003). *Texas Education Agency PEIMS report from 2002-2003*. Austin, TX.
- U.S. Department of Education, Office of Postsecondary Education (2005). *The Secretary's Fourth Annual Report on Teacher Quality: A Highly Qualified Teacher in Every Classroom*. Washington, D.C. (ERIC Document Reproduction Service No. ED-00-CO-0116)
- Zeichner (2005). *Professional development school partnerships: A place for teacher learning* [Online]. Available: <http://www.newhorizons.org/spneeds/inclusion/staff/zeichner.htm>