

Questions and Answers for the Ohio Governor's Commission on Teaching Success

**Prepared for
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The National Conference of State Legislatures
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*Colleges and Classrooms:
Redesigning Teacher Preparation Policies***

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1. What state (or regional) initiatives are being used to expand the supply of high quality educators to ensure that there will be enough teachers and administrators to serve current and future students? In which states can we find recruitment programs that are targeted to specific districts and geographic areas and to high-need subject areas (e.g., mathematics, science or special education)? What are these states doing, and what evidence is there that these initiatives are working?

Expanding the supply of high quality educators creates a conundrum of sorts. While policy makers need to expand the pool of potential teachers, at the same time, new educational demands push them to enact higher standards for teachers. Therefore, strategies should consider both screens (more rigorous entry requirements) and magnets (more serious incentives). Without careful attention to both, policy makers are likely to exacerbate the shortage even further (screens without magnets) or sacrifice quality (magnets without screens).

To address the growing teacher shortage, many states have been experimenting with several different strategies to recruit and retain more teachers, particularly in high need schools and subject areas. Below we address these strategies in a national and regional context of like-kind efforts as well as what the research literature illuminates.

Paraprofessional Programs

In **Kentucky**, one district is paying ½ of the tuition of teachers who are working to earn certification in shortage areas. **Georgia** is launching a similar program to identify their current out-of-field teachers, and then support and give them incentives to earn a license in the subjects they are currently “forced” to teach.

There are several paraprofessional preparation programs that start with teaching assistants who already are working in hard-to-staff schools and provide support (tuition, time, etc.) to become fully prepared teachers. These prospective teachers are important new recruits because they already live in the community and know the students and their families well. For example, the **California Paraprofessional Training Program** (in a state that has over 102,000 paraprofessionals providing daily instructional services) has proven to be highly successful. Established in 1990 (Senate Bill 1636), the PTP provides academic scholarships to offset the costs of tuition, books and fees for paraprofessionals seeking certification. In the period between 1999-01, there were 42 programs serving 2,940 paraprofessionals in 90 districts at a cost of about \$11 million and about \$3,000 per paraprofessional. Now there are 311 fully credentialed teachers with a 99 percent retention rate from 1995-01.

Another successful example is the paraprofessional program at **Armstrong State University** in Savannah, Georgia. Begun in 1993-1994, the program recruits non-certified personnel with good work records and some experience in college. The paraprofessionals take regular teacher

education courses, for which the program pays 80 percent of their tuition, books and fees and they work in public schools for at least three years in collaborating school districts (subs, aides, cafeteria workers, etc.) They continue working full time while going to school at night or all day on Friday. The program offers assistance with PRAXIS preparation, as well as support groups via participant cohorts while in college. They also provide tutorials for education classes. There have been 65 total participants since 1993-94, who had been selected from initial pool of 108. The teachers are now working in 4 districts (3 rural and one in Savannah); 96 percent are black and the average age is 42. The teachers have a stunning 94 percent retention rate. Most notably, these teachers have proven to be very effective: 12 of the 65 participants have a Master's degree, 2 are working on doctorates, 16 have been named Teachers of the Year for their schools, 7 have earned teacher supervisor support designations and now work with student teachers, 7 have developed technology expertise, and 7 have reading endorsements.

A recent evaluation of the Pathways to Teaching Careers Program (of which the Armstrong State program is a part), which prepares paraprofessionals and other non-traditional teaching candidates, shows that these programs produce teachers who are rated as more effective, have higher retention rates, and are more likely to teach in hard-to-staff schools than the typical beginning teacher (Clewell and Villegas, 2001).

Many teachers' aides, particularly in special education, have demonstrated commitment to those students, but will need tuition assistance and release time to get BA degrees, because not all will qualify for needs-based assistance through the universities. The new Elementary and Secondary Education Act legislation will provide states and districts with new federal monies to do so.

Scholarships

Currently, 27 states offer scholarships or forgivable loans to prospective teachers, with 11 state programs that aim at academically high-performing candidates and 10 that target hard-to-staff schools. The most notable and well-funded program is the **North Carolina Teaching Fellows Program**, begun in 1986, with 400 high achieving high school students awarded \$2.6 million worth of scholarships annually (\$6500 annual scholarship per student). The Fellows do not have to repay the "scholarship" if they teach for 4 years in the state. The profile of the Teaching Fellows includes an average SAT score of 1150 and average GPA of 3.6. Almost 20 percent are minorities, while 30 percent are male. The program receives \$2.8 million from state appropriations. As of February 2001, there have been 27,000 applicants. The program is very selective, and only 25 percent of the state's teacher education schools are given the opportunity to offer this more rigorous and comprehensive program of study for future teachers. To date, there have been 3,644 graduates and 2000 of them are currently teaching in 95 of the state's 100 counties. Nine are already National Board Certified Teachers and 35 have been named as Principal Fellows. Approximately 82 percent of teachers are still employed after their teaching requirement was met (i.e. 5th year) and 73 percent of teachers were still employed between the 5th and 10th years of teaching.

The **South Carolina Teaching Fellows** program is seeking to mirror the NC program, although it is not nearly as well funded. In 2000-2001, the program selected 153 students, and another 150 for 2001-2002 (The target goal is 200 students, which has not been met because of funding

issues). Over 62 percent of Teaching Fellows were South Carolina Teacher Cadets (see Early Outreach Efforts). The profile of SC Teaching Fellows includes an average SAT score of 1086 and average GPA of 3.6, with 10 percent male and 17 percent minority candidates. The state offers \$6000 annual scholarships (including tuition, room and board and summer enrichment) to each Fellow, and they must repay the state if they do not complete a 4-year service requirement.

Early Outreach Efforts

The **South Carolina Teacher Cadet Program** is one of the nation's highly touted efforts to attract bright high school students into teaching. Over 15 years, the SC Teacher Cadet Program attracted over 20,000 students of whom 10 percent are currently teaching in the state's public schools. Piloted in 1985-86 in 4 high schools, the program now serves 149 high schools serving over 2,500 eligible students annually. Now, 22 of the state's 30 colleges and universities with teacher education programs support these sites, with over two thirds granting college credit for completion of the course (one period per day for a year). The Cadet program is part of the South Carolina Center for Teacher Recruitment, which has many programs, including a middle school ProTeam program, and now a college scholarship teacher fellows program like the one in North Carolina. Eighteen states are replicating the Cadet program in some way. The budget for 2000-2001 was \$288,895 for 2,230 cadets, which is approximately \$130 per student.

Signing Bonuses

Signing bonuses are often touted as a cure-all for local and state recruiting concerns, but most of the evidence from programs that have employed them prove the contrary. The major lessons of using signing bonuses as a recruitment tool come from the **Massachusetts Institute for New Teachers** (MINT), which works with mid-career switchers who received \$20,000 signing bonuses to address the state's teacher quality and supply problems. In 1998-1999, MINT had 59 participants, all of whom received signing bonuses; in 1999-2000 there were 160 participants (105 received bonuses for superior qualifications); in 2000-2001 they had 200 participants (110 received bonuses for superior qualifications). The program goal was to target 500 participants with subject matter expertise who were expected to learn to teach in a short 6- week training program. However, MINT lost 20 percent of the initial 59 candidates after the first year (after the \$8,000 bonus was already paid out.) This loss doubled the national attrition rate. In addition, 31 percent who chose initially to teach in high-need districts quit or moved to suburban districts.

A most recent news report revealed that the attrition rate for these mid-career recruits, who entered with virtually no preparation, is getting worse. For example, nearly 50% of the teachers the Worcester public schools hired under the program in the last two years have already left the system. Reports from district officials indicate that "many of the teachers who left the program were stumped by the momentum and the culture of the school day"—surfacing the importance of preparation in alternative recruitment initiatives. District officials expect that of the 26 candidates training this summer in the Worcester schools, only four will "potentially be teaching in the system next year" (McFarlane, 2002).

In addition, **South Carolina** has attempted to recruit "teacher specialists" to work in the state's weakest schools last year. Despite an \$18,000 bonus for these teachers, the state only attracted 20 percent of the teachers they needed to fill these positions (115 applicants out of 500 positions, 3 weeks after the application deadline in January). Interviews with officials revealed that some

teachers that applied were not qualified (each specialist must have 7 years' experience and a masters' degree), while others would not move to these hard-to-staff positions because of location, lack of administrative support, and actual preparation and support for the difficult teaching tasks at hand (Robinson and Shelton, 2001).

However, higher pay for more difficult tasks and working conditions may be one solution. For example, the **New York City** schools, which have historically had great difficulty attracting certified teachers into their classrooms, will have 90% of their teaching force certified in the 2002-2003 school year. This significant change is due in large part to a 22% pay increase to lure certified teachers into the city, moving starting salaries from \$31, 910 to \$39,000 in one year. The deal, negotiated with the teachers union, will also give experienced teachers received an 18% pay increase. (Hays and Gendar)

Collect Data on Programs and Conditions

Most importantly, no state is collecting sufficient data to better understand its teacher development programs and the efficacy of its policies that attempt to link teaching and learning. All states need an accountability mirror to hold up and use to assess progress in their efforts to construct comprehensive and effective models of teacher development. When examining recruitment and retention strategies, we hear all too often that no data are available or that the information is not in a form that could be easily utilized-- we hear instead about anecdotes of program effects. In some cases the anecdotes are not clear. Over the last several years, some Southeastern states, including North Carolina, Georgia, and Kentucky, have done a great deal to build its teaching quality data infrastructure. However, even more can and needs to be done now.

Other Efforts

Two other states that have launched ambitious statewide recruitment incentives are New York and California. **New York** has employed a wide range of strategies, including the following:

1. Annual \$3,400 bonuses (for up to four years) to teachers willing to teach in a designated teacher shortage area or subject shortage area.
2. Up to \$2,000 for test preparation workshops or coursework leading to initial or provisional certification; reserved for teachers with temporary certificates who agree to teach for at least one year in a designated teacher shortage area or subject shortage area.
3. Stipends of up to \$2,000 to teacher candidates, who complete internships in urban schools; students may receive college credit and credit for field experience.
4. New York State Master Teacher program: Annual bonuses (for up to three years) of \$10,000 to National Board certified teachers who agree to serve in low-performing public schools.
5. \$2,100 to reimburse the cost of coursework required earning permanent or professional certification for teachers with initial or provisional certification who agree to teach for one year in a designated teacher shortage area or subject shortage area.
6. Intensive summer training course for teachers employed for the first time in New York City public schools for teachers who agree to teach for at least one year in a designated teacher shortage area or subject shortage area. (Prince, 2002)

7. NYC Teaching Fellows: An Americorps-based alternative route program that recruits mid-career switchers and pays full teacher salary plus tuition for a 2-year master's degree program. Training and support include a two-month summer preparation period that consists of master's degree coursework, field placement as assistants in summer school classrooms, support-group style meetings of cohorts that last throughout the teaching experience, and a school-based mentor.

California has also instituted several incentive programs recruit and retain more high-quality teachers. Between 2000 and 2001, California spent more than \$300 million on recruitment and retention initiatives. Some of California's incentives are available to all credentialed teachers, including the following:

1. Loan forgiveness of up to \$11,000 if teacher candidates agree to teach in California public schools for at least four years.
2. State income tax credits for credentialed teachers with at least four years of service who are actively teaching to claim annual; credits range from \$150 to \$2,500, depending on the number of years of teaching service
3. Stipends of \$1,000 to \$2,000 to credentialed teachers participating in Professional Development Institute programs.
4. Tax-deferred annuities that can result in thousands of dollars of additional benefits to teachers upon retirement.
5. One-time \$10,000 bonuses to National Board certified teachers.

California also targets some incentives to teachers who agree to serve in low-performing schools:

1. \$20,000 toward tuition and living expenses for full-time teacher candidates who enroll in an approved teacher preparation program and commit to teaching in low-performing schools.
2. Loan forgiveness of up to \$19,000 if teacher candidates agree to teach in low-performing California public schools for at least four years and teach in a subject shortage area.
3. Housing incentives to reduce the federal income tax liability or mortgage interest rates of teachers who commit to serve at least five years in a low-performing school.
4. Supplemental \$20,000 bonus to National Board Certified Teachers who serve in low-performing schools for four years, in addition to the one-time \$10,000 bonus. (Prince, June 2002, American Association of School Administrators)

One of the best recruitment strategies, though indirect, is the implementation of a comprehensive system of teacher development that brings together all the key pieces of a truly professional career. States that focus on high standards of performance for students and teachers, and invest significant resources in teaching as a profession, will attract potential teachers with greater ease than those who do not.

An excellent example is that of **Connecticut**. In a state with increasing poverty and language diversity, and whose student population is greater than 25% minority, student achievement has increased steadily and steeply throughout the 1990s, reaching number one in the nation in elementary reading and mathematics and achieving top rankings in science and writing as well.

The state has pursued a consistent strategy around teacher development since 1986. With the passage of the \$300 million Educational Improvement Act, the state:

- significantly raised and equalized teacher salaries;
- raised licensing standards and eliminated emergency licensing;
- required more teacher education for teaching reading, for teaching special needs students, and for using research-based practices;
- provided scholarships for attracting top candidates into teacher education in high-need fields and for high-need locations;
- created a beginning teacher mentoring and assessment program for all new teachers;
- invested in widespread professional development based on effective strategies like Reading Recovery;
- aligned student standards and teaching standards;
- stimulated improvements in teacher evaluation linked to teaching standards;
- created a low-stakes performance-based assessment system for students which provides rich information to districts and schools;
- provided categorical aid to low-achieving districts to help them improve the quality of education for their students.

Within three years, this combination of policies moved Connecticut from widespread teacher shortages (that resulted in the hiring of substantial numbers of unqualified teachers, especially in its cities), to teacher surpluses that have continued for over a decade. The attrition rate for first-year teachers is only 8.7 %, and only 3% after 5 years, both significantly lower than national rates. Connecticut now has one of the best-prepared teaching forces in the country, based on the sharing of common knowledge for more effective practice. While the state continues to work on reducing the achievement gap between rich and poor and white and minority students, the gap is closing. Currently, African American and Hispanic students in Connecticut outscore their counterparts nationally by more than 50% in reading.

2. What states have developed effective teacher preparation programs, including multiple career paths? What states are using effective strategies to develop standards for the teaching profession and for ensuring that these standards and their teacher preparation programs are aligned to student academic and performance standards? What evidence is there that these initiatives are improving student achievement?

Teacher Education Research

There are relatively few studies that track the specific effects of teacher education on student achievement. Some of the questions policy makers are now asking requires researchers to engage in a wide range of longitudinal studies that are rarely funded in education. Economist Dick Murnane is careful to point out that there are forms of teacher education that may be helpful, and that lack of evidence in large data sets about the effects of preservice education may be related to the lack of data collected on the topic at that time, nearly 20 years ago. In one of the most comprehensive reviews to date of what research tells policymakers and practitioners about the effects of teacher education on student achievement, Wilson and colleagues conclude:

“Overall, the research base concerning teacher preparation is relatively thin. The studies we found, however, suggest that good research can be done, but that it will take the development of more refined databases, measures, and methods, as well as complementary research designs that collect both qualitative and quantitative data.”

However, there is some evidence upon which policymakers can act in improving and investing in the right kind of teacher preparation. For example, in their search to determine what kinds of subject matter preparation teachers need, and how much of it do prospective teachers need, Wilson concluded that while research does show positive links between subject matter preparation and teacher performance and impact in the classroom, this link varies by the type of preparation received. As far as subject matter preparation goes, more is not necessarily better—teachers can acquire subject matter from subject-specific methods courses as well. In a well respected study, Monk (1994), drawing on data on 2,829 students from the Longitudinal Study of American Youth, found that teachers’ content preparation, as measured by coursework in the subject field, is positively related to student achievement in mathematics and science but that the relationship is curvilinear, with diminishing returns to student achievement of teachers’ subject matter courses above a threshold level (e.g., five courses in mathematics). In addition, teacher education coursework (e.g. methods courses in the content area) had a positive effect on student learning and sometimes had “more powerful effects than additional preparation in the content area” (p. 142).

Some researchers have noted that typical subject matter knowledge of preservice teachers may be lacking in fundamentals of the discipline. For example, while a preservice math teacher’s preparation may be sound in procedures and rules, it may be weak in reasoning and concepts. These weaknesses may pose an obstacle to high quality teaching, particularly when new reforms

are calling for higher standards for both students and teachers. The necessary reforms in teachers' subject matter preparation will be more complicated than requiring an academic major.

The Education Commission of the States has convened a teacher quality panel that is looking at range of issues related to the effects of teaching policy — including teacher education. ECS is commissioning work currently that will synthesize the information on teacher preparation (or new teacher readiness) into a comprehensive report, aimed primarily at policymakers (and principally at policy staff) that does the following:

- outlines the significant issues regarding new teacher readiness
- outlines their relationship to other teaching quality issues (e.g., recruitment)
- enumerates, and discusses the available evidence for, the most significant policy strategies being promoted or considered to address teacher readiness
- evaluates the strength of that evidence and notes what additional data or information need to be gathered
- describes what policy strategies various states are employing, and with what apparent result—focusing particularly on innovative and promising strategies

Across the country, teachers are prepared in more than 1,300 large and small, public and private colleges and universities, as well as through alternative programs offered by districts and states, but *program designs and teacher preparation vary widely*. While content preparation is important, it can also produce diminishing returns (Monk, 1994). Subject-specific methods courses are a better predictor of effective teaching than just majoring in a subject area. As noted previously, many math teachers—including math majors and those from alternative routes into teaching—may have procedural knowledge but little conceptual understanding. This suggests that simply having a content major may not be sufficient for effective standards-based teaching and learning.

However one study recently looked at how formal teacher preparation has an impact on teaching knowledge, beliefs, and practices in ways that positively affect student learning. This interesting study by Linda Valli revealed that teacher preparation in math has a particular affect on later student achievement in 2 distinct ways—one was developing a sense of teaching efficacy and the other was helping teachers become more “adaptative” or “flexible” in the teaching of mathematics. Both of these teaching characteristics, developed in the course of teacher education programs, later led to greater student achievement gains (Valli, 2001).

In addition to newer databases that allow some large-scale examinations of the influences of teacher education variables on student achievement, recent studies have begun to look at the outcomes of different teacher education program designs. For example, studies of 5-year teacher education programs—programs that include a bachelor's degree in the discipline plus an additional year of education study and extended student teaching—have found graduates to be more confident and better rated than graduates of 4-year programs in the same institutions and as effective as more senior teachers, as well as more likely to enter and remain in teaching (Andrew & Schwab, 1995; Denton & Peters, 1988).

Standards for Teacher Education

To be sure, much work needs to be done to truly reinvent teacher education in the 1,300 colleges and universities that prepare in-service teachers and 15,000 school districts that organize professional development for in-service teachers. We know that for this reinvention to take place no longer will preservice education be the sole province of the university and in-service be the sole province of the school district.

Over the past several years, more details of effective teacher education surfaced. In *Doing What Matters Most*, Darling-Hammond (1997) identified exemplary teacher education programs located in public and private universities, across all regions of the country, and at the undergraduate and graduate levels. They share several features that allow them to break through the limitations of traditional teacher education programs that include having: (1) teaching faculty develop courses collectively using shared standards; (2) curriculum is grounded in knowledge of child and adolescent development, learning theory, and motivation; (3) students participate in extended clinical experiences (at least 30 weeks in classrooms) that are carefully chosen to support the ideas and practices from college coursework; (4) well-defined standards of teaching performance are used to guide students and evaluate coursework and clinical work; (5) there are strong P-16 relationships, and common knowledge and beliefs among teacher education, arts and sciences, and K-12 faculty; and (6) prospective teachers engage in problem-based learning, case study methods, teacher research, and performance assessments to ensure that what their students are learning applies to the real work of classroom teachers.

State and National Efforts

More colleges and universities are using the **INTASC** standards to revise their teacher education programs. In addition, we are finding that with leadership provided by **NCATE**, more teacher education programs are requiring their graduates to actually demonstrate how their knowledge of subject matter and teaching strategies improves student achievement. There has been a steady growth of NCATE accredited IHEs — from 481 in 1996 to 517 in 2000 (including the fact that over the last several years, 25% of the IHEs do not pass the NCATE standards initially). Many states go several steps further. For example, the **Oklahoma Commission for Teacher Preparation** requires that all schools of education participate in candidates' portfolio assessment, individual program reviews, and joint state/NCATE accreditation. Washington's statewide performance-based pedagogy assessment of preservice teacher candidates is being designed and piloted by the **Washington Association of Colleges for Teacher Education**, to be fully implemented during 2003-04.

The **Georgia University System** actually *guarantees* the quality of its teacher candidate graduates approved in 1998 and taking effect with graduating class of 2002. **Oregon** has developed improved methods for holding institutions accountable for high quality teacher preparation through the establishment, piloting, and implementation of new statewide accountability guidelines, including a first time report card for new teachers and a performance assessment aligned with K-12 standards.

One notable effort is the work of the **Council for Basic Education (CBE)**, and the **American Association of Colleges for Teacher Education (AACTE)**, which are jointly engaged in a five-

year, multistate initiative to help universities redesign teacher preparation programs to ensure that teacher candidates have the content knowledge and pedagogical skills to support K-12 standards. The **Standards-based Teacher Education Project** (STEP) supports university faculties (both teacher education and arts and sciences) in selected states in using the framework provided by K-12 academic standards and new teacher assessment standards to examine and redefine their teacher education programs.

Recently, the Carnegie Corporation of New York launched Teachers for a New Era, a \$40 million initiative in which the university-based preparation of teachers is understood to be an “academically taught clinical practice profession” that requires close cooperation among colleges of education, arts and sciences, and actual practicing schools. These school-university partnerships would build teaching residencies like those found in medical schools and have universities judge their programs based on hard evidence. Such evidence includes the extent to which graduates produce students' learning gains once they enter the teaching profession. For Carnegie, if teaching is to become a modern clinical profession, practitioners must routinely use clinical research to develop and promote teaching methods that are proven effective in raising student achievement. Four colleges and universities, Bank Street College, University of Virginia, California State-Northridge, and Michigan State University, have received substantial five-year grants to pursue Carnegie's vision for improving and investing in pre-service teacher education.

Professional Development Schools

Professional development schools are school-university partnerships modeled after teaching hospitals. Most PDSs have three functions, including improving teaching and learning for P-12 students, pre-service educators, and in-service educators at the school and university. A fourth function often includes collaborative research or inquiry focusing on documented learning outcomes in the three target populations (*How Professional Development Schools Make a Difference: A Review of Research* (2001)).

Because PDSs are complex and require interagency agreements among higher education and K-12 systems, they vary greatly due to contextual factors and are highly susceptible to individual personalities and local contexts. There are somewhere between 600 and 800 professional development schools in the United States. Implementation is very uneven. However, NCATE has developed standards for PDSs, and some school-university partnerships are just beginning to subscribe to them. The **University of North Florida** has used NCATE's professional development school standards to dramatically change its clinical teacher preparation component, with recent graduates becoming more likely to enter and remain teaching in “hard-to-staff” schools.

In spite of the confluence of factors that have made research on the effectiveness of PDSs difficult in the past, there have been several studies that do a good job of assessing the evidence of PDS effectiveness. These studies have documented positive effects for pre-service educators such as a greater participation rate in teaching and in teaching in urban schools; ratings on classroom discipline, use of technology, and use of reflection; and pass rates on the Texas test for new teachers. In addition, a **Texas** study has found greater retention rates for new teachers prepared in PDSs, including significant differences in the retention of Hispanic and male

beginning teachers. Several studies have also linked student-learning gains to being in a PDS (*How Professional Development Schools Make a Difference: A Review of Research* (2001)).

The RAND Corporation studied the effects of PDS relationships between **West Virginia University** and 21 public schools at the elementary, middle, and high schools levels. One notable effect was the change in the teacher preparation program itself, from a four-year bachelor's degree program to five-year program culminating in a bachelor's in a discipline and a master's in education, an increase in admission requirements, a reinvented curriculum, and a requirement that each novice teacher be assigned to spend extensive time in one PDS for three consecutive years. Although hampered by limited data and a short timeframe, the study did find substantial PDS gains in math at all grade levels on the Stanford Achievement Test and possible positive effects on ACT scores (*The Benedum Collaborative Model of Teacher Education: A Preliminary Evaluation* (2000)).

The state of **Maryland** has developed PDS standards and developmental guidelines aligned with the NCATE standards as part of the state's teacher preparation reform efforts begun in 1990. The state's Department of Education has established expectations for all institutions to develop "extensive school-based preparation" including an internship in the schools of at least 100 days' duration encompassing two consecutive semesters. By 2003 these standards will be used as part of the state's approval process for all 22 teacher preparation institutions. The standards will be used to assess institutions on where they stand according to a PDS developmental continuum, ranging from "beginning" to "leading." State-trained and -appointed teams will visit five institutions' PDS sites to provide feedback on the validity of the standards in practice and to make a statement of standing for the PDS itself. Funding from the state legislature for PDSs will be sought; however, funding currently comes from federal grants, primarily Title II.

Over the past several years, many institutions of higher education (IHEs) have reported efforts to align programs and teacher education curriculum with the NBPTS standards for accomplished teaching. Their efforts include redesigning advanced degree programs, creating support programs for candidates seeking National Board Certification, and recruiting NBCTs as clinical faculty. National Board Resource Centers are located at five institutions of higher education throughout the United States, including Bank Street College (New York, New York), Florida A&M University (Tallahassee, Florida), Illinois State University (Normal, Illinois), Stanford University (Stanford, California), and the University of Texas at El Paso (El Paso, Texas).

Under the leadership of former Governor James B. Hunt, who also served as the chair of the National Board for Professional Teaching Standards for ten years, **North Carolina** has begun to align all of its teacher preparation programs with the state's student accountability standards as well as the standards and assessments of the National Board. For example, the state has assembled discipline-specific panels of arts and sciences faculty, teacher education faculty, and NBCTs to link teacher and student standards, develop a comprehensive plan to ensure standards-based professional development, provide professional development for teacher-education faculty, and develop Web-based instructional modules. Six discipline-based panels have examined state student-curriculum standards, national professional curriculum standards (e.g., NCTM), INTASC and National Board teaching standards, and PRAXIS (teacher) exam requirements to determine what teachers need to know and do to help the state's students meet the new standards.

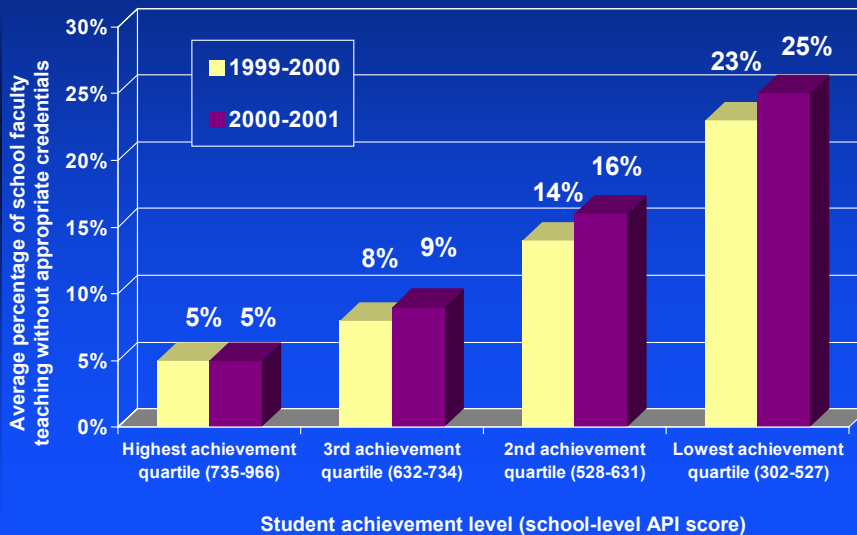
Arts and sciences faculty are beginning to change their courses in the state's colleges and universities in order to better prepare teachers.

Alternative Preparation Strategies

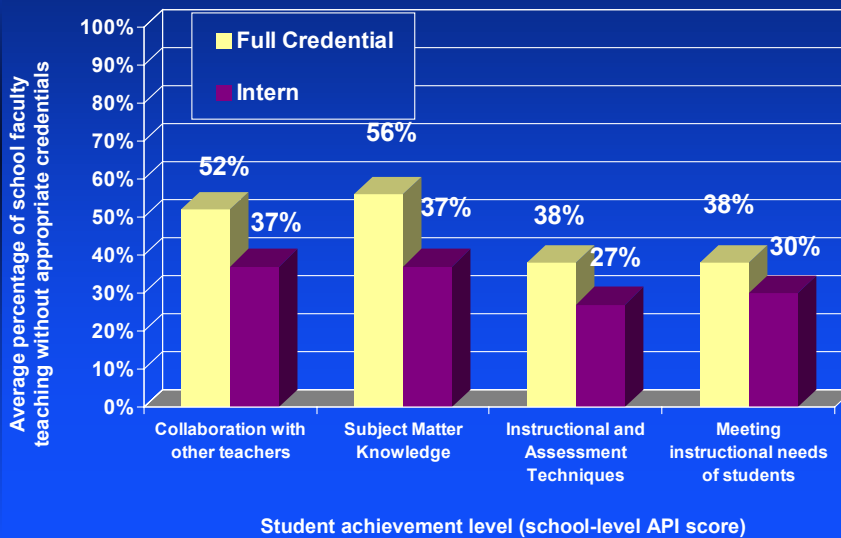
There are five main paths potential teachers can follow into employment. They include traditional teacher preparation programs at institutions of higher education, alternative routes to certification supported by institutions of higher education, alternative routes to certification supported by local districts, teachers who have left the profession and then return, and teachers who come into the state from other states. One of the most rapidly growing routes for new teachers is the spate of alternative route programs that are springing up around the nation. The National Center for Education Information (NCEI) reported that by 2002, 45 states, plus the District of Columbia, report having some type of alternative teacher certification program. 20 states have created 34 new programs over the last three years alone. The group has identified 11 different classes of alternative routes. These classes of programs range anywhere from those programs specifically designed for talented mid-career individuals who receive formal pedagogical instruction and mentoring support before and during their teaching assignment, all the way down to those that are simply emergency routes, where a prospective teacher receives some kind of waiver to teach, but without any support or supervision. Some are programs sponsored by institutions of higher education; some are sponsored by districts. Some analyze a candidate's transcripts or work experience and then design inservice training to fill gaps. Some are designed to allow out-of-field teachers to add on a subject endorsement. Each state's policies are very different, and no state has analyzed the effects of the policies they do have in place.

California may be the best example of a state pursuing varied kinds of teacher preparation approaches simultaneously. However, SRI's Status of the Teaching Profession 2001 report shows a wide gap between the preparedness and effectiveness of teachers who come through traditional and alternate routes in California. The following charts demonstrate this gap. The first table shows that schools with higher percentages of teachers without full credentials are more often in lower achievement quartiles, while the second shows that principals rate teachers from alternate routes (intern programs) as less effective overall.

California: % of Teachers Without Full Credentials, by School-Level API Score 1999-2000 vs. 2000-2001 (Center for Future of Teaching & Learning)



Principals' Perceptions of Preparedness of New Hires: Interns vs. Fully Credentialed Candidates (Center for Future of Teaching & Learning)



However, it is still possible for states to create high-quality alternative routes that prepare teachers well for the classroom. The **Washington Professional Educator Standards Board** has

reviewed selected alternative route programs in several states, and has come to some conclusions about what criteria are necessary to ensure that these programs and their graduates are of the highest quality possible:

- Ensure that all candidates for certification meet high standards required by the state.
- Focus on increasing the number of qualified candidates in shortage and high need areas and increasing the racial/ethnic diversity of candidates to better reflect the changing demographics of student populations.
- Provide alternative route candidates with the most flexible, expedient, least costly route possible without compromising quality.
- Include a rigorous screening process that evaluates candidates' suitability for an alternative route.
- Have high-quality mentorship as a significant component of field-based experiences.
- Maximize field experience and be performance-based, not seat-time based.
- Recognize relevant professional experience, such as instructional experience in other settings, to eliminate unnecessary coursework based on education and experience.
- Reflect strong articulation agreements and overall collaboration when multiple institutions are a part of an alternative route.
- Provide a statewide, consistent, geographically accessible approach as a stable means for recruiting capable individuals to teaching (Washington Professional Educators Standards Board, 2000).

High standards such as these for alternative route programs are critical to ensuring that candidates emerging from these programs are well prepared and highly qualified.

3. Which states have developed innovative approaches to assessing the knowledge and skills of new teachers? What new and promising approaches to licensure have been developed?

4. In what states can we find effective induction/entry-year programs? How are they approaching performance evaluations for entry-year teachers for licensure purposes?

A. The Connecticut Beginning Educator Support and Testing [BEST] Program

The Connecticut Beginning Educator Support and Testing [BEST] Program is a comprehensive process of induction for teachers in their first three years of teaching. The BEST program has two separate components: an assessment process that requires beginners to demonstrate their competence in the first three years, and a support process that provides technical assistance.

The assessment process incorporates two models of evaluation: a clinical model of classroom observation using the Connecticut Competency Instrument, and a content-specific portfolio assessment. Trained assessors use the observation instrument in that first year of assessment. Beginning teachers may demonstrate essential competence in as few as one or as many as twelve observations. In their second year, beginning teachers develop a portfolio that must meet specific well-defined expectations. These portfolios require teachers to respond to various activities designed to elicit their knowledge of content and pedagogy.

The support system revolves around three components: an assigned school-based mentor or mentor team during year one, beginning teacher clinics, and content-specific seminars. The school-based mentor is a trained practitioner who regularly meets with and supports the first year teacher. The beginning teacher clinics include a series of three-hour sessions that address the needs of novices in their first year. Finally, in year two, beginning teachers participate in a series of content-focused seminars conducted by trained, experienced teachers. These sessions assist beginners in effective teaching practices and prepare them for the portfolio assessment.

By focusing on induction, Connecticut has developed a leverage point to improve teacher performance across the continuum: pre-service through in-service. With the beginning teacher at the epicenter, colleges and universities focus their efforts on preparing teacher candidates in new standards and new evaluative processes that include reflection. Experienced teachers become trained mentors and “content-coaches” in year two. Those who review and rate the portfolios receive specialized training. With promoting best contemporary practices in teaching and learning, all program participants benefit.

BEST is the central component of the Connecticut teacher improvement initiatives that began in 1986, which rest on tight coupling of the state teaching standards, teacher assessment, induction, and licensure. The program serves 3,200-3,300 new teachers in the first year of an induction cycle, and about 2,700 in second year (certain subject areas have abbreviated programs, so not all new teachers do the 2nd year portfolio.) In addition to impacting beginning teachers, nearly 40% of the state’s experienced teachers have been trained in effective teaching practices in order to

serve as mentors and assessors of beginning teachers. The majority of Connecticut's \$3.4 million budget for BEST is used for the state-run mentor teacher workshops. Also, each district receives about \$200 per new teacher from the state to pay for mentor teachers' stipends. The state does not collect much data on the program, although it is reported that just over 1% of the state's 3000 new teachers last year did not pass the assessment portion of the program. Plans are underway this year to collect useful information about how interns performed in the program.

B. California Beginning Teacher Support and Assessment (BTSA) Program

California is one of the most well known states that have struggled mightily to attract, prepare, and retain sufficient numbers of teachers. Over the last ten years, the state's policy community has increasingly recognized the need to create programs to retain teachers. The most prominent program is the Beginning Teacher Support and Assessment (BTSA) program, which was authorized by law in 1992. The law called for "the gradual phase-in of support and assessment for all beginning teachers in California." Over the last few years, the program has grown substantially. In 1996, only 5% of eligible beginning teachers were supported. The BTSA budget was nearly quadrupled in 1998-99 in efforts to reach many more new teachers the state was beginning to employ. The 2000-01 budget called for a further increase in funding to \$88 million. Along with the growth in the budget, BTSA began serving larger numbers of teachers, reaching more than 12,000 in 1998-99 —the last year for which SRI has actual numbers. In 1999-2000, the program doubled in size to serve approximately 23,500 teachers and in 2000-01, 26,500 teachers were served. A 2000 report revealed that of about 1,000 districts in the state, only 180 do not have BTSA programs. And while there are sufficient funds available to serve all newly credentialed teachers, there are not sufficient funds to serve all of the state's new teachers, including those who are entering without any preparation whatsoever. The state BSTA program allocates \$3320 per new teacher, with local districts expected to contribute an additional \$2,000 to the total cost. Some districts like New Haven (CA) invest more in its new teachers.

Key elements of the BTSA program include support (from a mentor) and individualized formative assessment (assessment for the purpose of improving practice, not for formal teacher evaluation). Whenever possible, the same person provides support and assessment. BTSA now includes a subject-specific component. During a two-year induction period each BTSA teacher and the support provider/assessor develops, and regularly revises, an Individualized Induction Plan (IIP) based on the novice teacher's emerging needs. An IIP includes a beginning teacher's growth goals, specific strategies for achieving those goals, and documentation of progress in meeting those goals. In addition, first- and second-year teachers participate in intensive learning activities that build on their pre-service preparation and lead to lifelong learning.

However, each BTSA program has distinct characteristics that reflect local circumstances; and state standards provide criteria for designing, implementing, and evaluating induction programs, but do not guarantee that new teachers receive the same kind of solid support they need. Still, the program is seen as a success overall.

The California Credentialing Commission reported that in 1999-2000, of the 15,000 first-year teachers in the program: 96% were retained; 3% were not re-elected, and 1% left the profession. For the 9,500 second-year teachers in the program: 94% were retained; 4% were not re-elected,

with only 2% deciding to leave the profession. Overall the Commission claims that the program has reduced attrition by 66 %.

C. New Teacher Project (NTP), UC-Santa Cruz

Begun in 1988, NTP supports Santa Cruz, San Benito, North Monterey, and Santa Clara counties; and also provides support for 10 districts in the greater San Francisco Bay Area. NTP is aligned with the California Standards for the Teaching Profession (CSTP) and with California student standards. Advisors meet with new teachers weekly in their classrooms to observe, coach, and assist with planning, assessment, and effective teaching strategies. There are two sources of funding: NTP receives \$3,320 per new teacher from California's Beginning Teacher Support and Assessment program and local school districts contribute \$2,100 per new teacher served. NTP reimburses each school district for the salary and benefits of each mentor/advisor who is "on loan" to the program.

In 1999-00 there were 30 highly trained mentors who must be exemplary veteran teachers with a minimum of 7 years of full-time classroom experience, strong letters of recommendation, strong interpersonal and communication skills, and extensive experience working with diverse student populations. Elementary teachers are always assigned mentors with experience teaching at the elementary level, but not necessarily at the same grade level. Subject matter matches are made whenever possible. New teachers also have the opportunity to receive content-specific pedagogical support from a team of advisors with expertise across the subject areas, as well as through the monthly seminar series (described below).

The mentor/advisor appointment lasts 1 year; mentors are strongly encouraged to serve for a 2- to 3-year period, and almost all of them do. Advisors meet for 3 hours per week for training and professional development. There are 13-15 new teachers per mentor. Advisors are released from their regular classroom positions to work full time with new teachers, both in and out of the classroom. The program also has an ongoing coaching component in which new advisors are paired with more senior advisors for assessment and support. In addition, new teachers use a written survey instrument to evaluate their advisors twice a year (once at midyear and once at the end of the school year).

In 1999-00, 450 new teachers were supported by NTP. Advisors meet weekly with new teachers, both in and out of the classroom, for a total of about 2 hours per week. New teachers also attend a monthly seminar series that focuses on content-specific pedagogy (with a special emphasis on literacy development) and that is designed to build a support network and ongoing professional dialogue among beginning teachers. New teachers are given 2 full release days during the academic year, and they meet with their advisors weekly, both in and out of class, for about 2 hours a week. In addition, opportunities for reflection, self-assessment, observations, curriculum planning, and staff development are offered throughout the year. New teachers collaborate with their advisors to develop an Individual Learning Plan (ILP) that delineates professional growth goals and plans for achieving those goals. Self-assessments at the beginning and end of each year identify areas for growth and guide the revision and modification of the ILP. In addition, new teachers, with the support of their advisor, collect evidence of practice and professional growth in relation to CSTP goal areas. Advisors analyze new teachers' performance monthly, based on evidence of practice gathered during weekly meetings. New advisors partner with

veteran advisors to analyze the assessment evidence and determine support strategies for the new teachers. New teachers also receive formal performance evaluations from their principal. If a principal or an advisor believes that a new teacher's performance is not satisfactory, the program works closely with all parties to develop intervention plans. Occasionally, if these interventions are not successful, new teachers are counseled out of the profession.

Retention data indicate that 94% of the NTP participants who began teaching in 1992-93 currently remain teachers. In a 1995-96 survey of administrators, 95% of respondents credited the NTP with improving the performance of beginning teachers. Specifically, principals note that NTP programs lead to improved teacher morale, better classroom instruction, and more effective classroom management.

D. North Carolina's Performance Based Licensure Program

With passage of the Excellent Schools Act in 1997, all new teachers in North Carolina are required to participate in a three-year Initial Licensure Program designed to "provide new teachers with the support they need to succeed" in the classroom. The licensure process required that new teachers complete a Performance-Based Licensure (PBL) program and is offered within a context of support and induction. To gain a continuing professional license, each new teacher in North Carolina was to complete a Performance-Based Licensure (PBL) product. However, at the time of this writing, the 2002 North Carolina congressional budget has stricken the product requirement from the budget. The State Board of Education has yet to consider what "rigorous standard" will take its place. Ever since the product requirement was first instituted for the cohort of teachers entering their first year in 1999, implementation problems have abounded. Although the product requirement is now being deleted, the state's new teacher induction program (in its previous form) has many elements worth noting. As such, it is important to highlight what the state has tried, what has worked and what has not.

The Performance-Based Licensure (PBL) Program was designed to provide beginning teachers direction, support, and feedback during their first years in the classroom so that their experiences are positive and focused on the knowledge, skills, and dispositions associated with effective teaching. In this process, the beginning teacher was to demonstrate what he/she knows and is able to do by assembling a Performance-Based Product that contained evidence from the second year in his/her classroom and demonstrates basic mastery of the ten Interstate New Teacher Assessment and Support Consortium (INTASC) standards. Rather than focusing only on the data provided by a classroom observation, the performance-based product included multiple sources of data gathered and developed in the teaching-learning process. The Performance-Based Licensure Product was not a portfolio. Rather, it was a formal documentation of evidence used to award continuing professional licensure to teachers in North Carolina.

It is the responsibility of the person seeking a license to demonstrate that he or she has the requisite knowledge, skills, and attitudes. The Performance-Based Licensure Process was designed to offer the beginning teacher the autonomy and responsibility for developing a product that reflects his or her teaching. The model recognized the very different contexts in which teachers work and provided them the opportunity to present that which best reflects their knowledge and skills in that context.

The PBL product was a collection of evidence gathered over time in the normal course of teaching, using a systematic process of reflection. Evidence and artifacts submitted in the Performance-Based Licensure Product were selected from classroom teaching and related professional experiences and included such items as unit and daily lesson plans, teacher-made assessment materials, classroom management plans, parent communications logs, samples of student work and video and audio tapes as well as summative evaluations. The actual product contained three components: Instructional Practice, Unique Learner Needs, and Classroom Climate. Each component had a required cut score. Candidates who did not earn the required minimum score had to rework and resubmit the portion(s) of the product with identified deficiencies. The product was typically submitted during the second year of teaching. Lateral entry and provisionally licensed teachers had to be within six semester hours of completing their prescribed programs of study to submit the product.

The Performance-Based Licensure Program allowed up to three licensure reviews. The assessment procedure recognizes that practitioners can and should be part of the decision about continuing licensure. Performance-Based Products were assessed by at least two assessors who completed a rigorous training program. Of these assessors, one had to be a practicing classroom teacher who holds a license in the same area as the one being assessed. Assessors did not know the candidate and worked independently of each other.

In recognition of the professional milestone evidenced by the completion of the PBL process, the largest increase (approximately 6%) on the teacher pay scale included in the Excellent Schools Act was placed after the third year to correspond with the conversion of an initial teaching license to a continuing teaching license. Another large increase (approximately 10%) was placed after the fourth year to correspond with the earning of tenure, another professional milestone.

Induction

All Initially Licensed Teachers (ILT's) are assigned a mentor teacher and each LEA is required to offer some sort of new teacher orientation program. Although the reality of working conditions for new teachers ranges widely across the state, the State Board of Education recommends to every LEA the following working conditions for teachers receiving induction:

- assignment in the area of licensure;
- mentor assigned early, in the licensure area, and in close proximity;
- orientation that includes state, district, and school expectations;
- limited preparations;
- limited number of exceptional or difficult students;
- minimal non-instructional duties; and
- no extracurricular activities unless the initially certified teacher requests the assignment in writing

Each beginning teacher is required to develop an Individual Growth Plan in collaboration with his/her principal (or the principal's designee) and mentor teacher. The plan must include goals, strategies, and assessment of the beginning teacher's progress in improving professional skills. To assist the beginning teacher in meeting performance-based licensure requirements, the plan

should be focused on the INTASC Standards that form the basis for the performance-based product. In developing the plan, the initially licensed teacher, principal (or designee), and mentor teacher should begin with an assessment of initially licensed teacher's knowledge, dispositions, and performances related to the key indicators for each of the INTASC Standards. Throughout the year, formative assessment conferences should be held to reflect on the progress of the initially licensed teacher in meeting the goals established for professional growth. The plan should be updated on an annual basis and within each year of the Initial Licensure Program. North Carolina's Performance Based Licensure and Induction programs, in their previous incarnation, have much merit. They are based on a framework of standards closely aligned to INTASC. The performance assessments ask teachers to reflect on their practice in three major areas of professional practice: instructional practice, meeting the needs of unique learners and the climate of their classrooms. Through the use of videotaped lessons, teachers must address how their practice meets the requirements of the ten INTASC standards. Because there are no state mandated requirements for mentor training, the support and guidance of mentors for new teachers is helping in some districts and less so in others. Additional days and stipends have been allocated for mentor support but no districts offer reduced teaching loads or other incentives to support or promote mentoring. Though funding is not present for an Initial Licensure Program Coordinator within each LEA, many ask human resource and personnel departments to take on such roles. As a result, many of the realities of the PBL and Induction programs vary from district to district.

E. Indiana's Beginning Teacher Assessment Program

The Indiana Professional Standards Board's (IPSB) new system for the preparation and licensure of Indiana's teachers integrates both support and assessment into the fabric of a teacher's professional growth throughout the continuum of his/her career. The IPSB recognizes the need for both external and internal accountability measures and the capacity-building of support in the effective improvement of teaching and learning in our schools. In response, the IPSB has designed a system that is grounded in research-based standards, performance assessments, content-specific pedagogical support and collaborative partnerships for both novices and mentors.

During the first two years of a teacher's career, the assessment period, the interplay between support and assessment is perhaps the most evident in the guidance provided to beginning teachers through their school-based mentors, the IPSB-provided Support Seminars, and the instructional portfolio handbook. Throughout their first year in the profession, beginning teachers have opportunities to interact with other new teachers and master teachers within their content area during five three-hour Support Seminars included in an IPSB field test. In addition to attending these regional seminars, the design calls for beginning teachers to have mentor teachers who have participated in standards-based mentor training programs and have experience with the assessment portfolio. The portfolio handbook, developed to guide teachers through the preparation of their assessment portfolio, provides technical directions and content-specific standards-based cues to help them plan, assess, and reflect on the learning evidenced by their students.

The Assessment Portfolio, though a tool for assessing new teachers' skills and performances in teaching a particular subject at a specific grade level, is also an instructional vehicle for helping

teachers collect information about their students, document the learning that is occurring in their classrooms, and analyze the impact of their own instruction and assessment choices on the diverse learners within their classes. As an assessment tool, this portfolio provides accountability for new professionals as they enter Indiana schools. As an instructional vehicle, it guides and supports novice teachers as they begin to develop the habits and practices of the profession.

5. Where can we find new approaches to compensation, particularly those that are linked to evaluations for knowledge, skills and performance? Which states are using market-driven compensation systems? What other reward structures are being used and with what effect?

In 1996, the National Commission on Teaching and America's Future argued that the critical importance of teaching to the mission of schools should be acknowledged by a system in which "the highest paid anybody in a school system is a National Board certified teacher, who should earn as much by teaching as by becoming an administrator." Many states now reward National Board Certified teachers, some with substantial salary increases, and the number of NBCTs has grown significantly.

With growing evidence of the importance of teachers' content and teaching skills in improving student achievement, new teaching pay systems explicitly value what matters most. This means, more than anything else, identifying excellent teachers and making sure they are paid more for assisting other teachers. A number of peer assistance and review programs that are cropping up around the nation are doing just that.

Unfortunately, few school districts in this country have followed the lead of Cincinnati, Denver, Rochester, Douglas County (CO), and Miami-Dade in breaking away from the single-salary schedule. These districts have already developed or are in the process of developing new salary systems that not only provide rewards for increasing student learning, but also for developing knowledge and skills that make a difference for student learning. These programs are using career advancement and leadership opportunities for classroom teachers. As long as mediocre teachers receive the same rewards as excellent ones, and until we stop using higher salaries to lure teachers into the ranks of administration, there will continue to be a gap between the rhetoric that calls teaching a profession and the realities of our current arcane system of teacher compensation.

To address these issues and place teaching firmly in the ranks of the recognized and honored professions in the United States, states and school districts should consider:

- Developing different teaching roles and pay structures that reward knowledge and skill, as well as mentoring, to build and spread teacher expertise.
- Paying teachers more for learning to teach expertly in two or more subjects.
- Paying teachers more as they demonstrate, through a variety of performance-based examinations, teaching knowledge and skill.
- Enacting incentives and supports for National Board Certification in every state, with the aim of certifying 105,000 teachers -- one for every school in the nation -- during the next five years.

Research on Teacher Salary

There is growing evidence of the importance of teacher salaries in improving teaching and learning and growing sentiment among policy makers, practitioners, and the public that teacher pay must be changed substantially in order to reward more effective teachers, those who take on more responsibility, and those who learn and use new knowledge and skills that make a difference for student learning. Efforts to differentiate teacher pay in the past have been undercut by a wide range of technical and political problems, including notable flaws in most attempts to institute individual-based merit pay plans. However, new information about how teaching quality matters for student achievement, technical advancements in teacher evaluation, and a growing consensus that teachers need to be paid more and differently suggest that the time is ripe to push ahead on this issue.

First of all, over the last several years, new research has shown that salaries are an important part of any teacher development system, and a range of evidence from different types of studies suggest that the above recommendations stand on very firm ground. One key piece of evidence comes from Connecticut –which has both increased and equalized salaries while simultaneously raising standards for teacher education and licensing and introducing a well-managed teacher induction program. By the late 1990s, the state had few unqualified teachers teaching in its public schools and posted some of the highest student achievement gains on the National Assessment of Educational Progress (Wilson, Darling-Hammond, and Berry, 2001). The Connecticut case speaks to the importance of paying teachers more, but also doing so in a larger set of teacher development reforms, including changes in teacher education standards, increase in supports for new teachers, and aligning professional development and re-certification.

In addition, some recent evidence has linked salaries with student achievement. Bond's (2001) study found that states with significantly higher teachers' salaries had higher test scores, lower drop-out rates and lower attrition rates among new teachers, even controlling for poverty and minority rates and parent education levels. Her analysis revealed that past research about teacher salaries has not shown this link because those studies used average salaries as a predictor variable. Her recommendation is not only that teachers' salaries be raised, but that they be raised significantly beyond a cost of living adjustment, to a level 40% or higher above what they are now—otherwise, the raises will have no effect. Hanushek (2001) found that schools serving a high proportion of students who are academically very disadvantaged and either black or Hispanic may have to pay an additional 20, 30 or even 50 percent more in salary than those schools serving a predominantly white or Asian, academically well-prepared student body. Other researchers have found that higher teacher pay reduces the probability that teachers leave the profession, especially when differences in alternative earnings opportunities are taken into account (see Murnane and Olsen (1990) and Dolton and van der Klaauw (1999)).

In addition, other evidence has suggested that salaries do make a difference in terms of filling vacancies. A report out of the Maryland State Department of Education revealed that the state's schools have filled almost all of the 8,100 teacher vacancies they faced for the 2001-2002 school year — with district officials pointing to not just earlier hiring and innovative internet-based recruiting techniques, but also higher salaries paid for by the state's the Teacher Initiative Program which raised salaries by 6%.

However, today, the average salary for 2.8 million teachers is at \$40,574 - tens of thousands of dollars less per year than their peers earn in other professions. Today's average teacher salary represents an increase of only \$135 (or 70 cents a day) in constant dollars over the average salary in 1972-73. These chronically low salaries are having a serious impact on the ability of school districts around the country to attract the best candidates into the teaching profession. Although beginning teachers' salaries have been raised significantly over the last few years — i.e., 13% from 1994 to 1999 — those increases have not fared favorably with other professions like business (25%), marketing (19%), and engineering (19% increase).

Average salaries mask a number of important issues. In some states teacher salaries can vary dramatically. Wealthy suburbs can and do pay a great deal more for teachers than those in urban and rural areas, which continues to serve as a barrier to attract and retain teachers. For example, in a recent report from Illinois, produced as a part of its state partnership work with NCTAF, revealed that in 1999 beginning teachers with a bachelor's degree earned a low of \$16,485 and a high of \$38,097, depending on the wealth and location of the district. On the other hand, the most experienced teachers earned between \$26,086 and \$92,125, depending on the wealth and location of the district. As principals and teachers alike report, "money does matter" in recruiting and rewarding teachers.

In addition, a report from Education Week (2000) revealed that younger teachers, ages 22 to 28, earned in 1998 an average of \$7,900 less than other college graduates of the same age. For older teachers the discrepancy was even greater. Teachers between the ages of 44 to 50 earned on average \$23,655 less than those of the same ages in other professions.

Granted, there are numerous complaints about the lack of rigor of many master's degree programs available for teachers. Still, while many of the master's degrees teachers have earned in the past do not directly support their teaching assignments and the specific students they teach, there is some evidence that advanced degrees make a difference for student achievement (see Ferguson). However, for non-teaching professionals who hold master's degrees, they earn an average of about \$24,600 more than those in the same fields who held bachelor's degrees - nearly twice the difference for teachers. And, middle-aged teachers, between the ages of 44 and 50, who held master's degrees earned on average \$32,000 less per year than people with master's degrees in other occupations.

Public Support for Paying Teachers More

While teaching salaries continue to lag behind other professions, opinion polls continue to show that the public is willing to pay teachers more. A nationwide poll conducted in 2000 by Lou Harris revealed that almost 9 in 10 (89%) Americans agree that truly accomplished master teachers should be recognized and rewarded with higher pay. This same poll revealed that forty-four (44%) believe that teachers in their communities are inadequately paid, while another 34% think their local teachers are just adequately paid. Less than 1 in 5 Americans believe that local teachers are well paid (14%) or overpaid (3%). In terms of rating teacher compensation nationally, 81% of the public believe that teachers are inadequately paid. A recent poll conducted in July 2001 in Arizona revealed that parents with school-age children believe raising teacher salaries is a key component of improving public education. (The average teacher salary in Arizona is \$36,000 compared with \$41,800 nationally, according to the Arizona Education

Association. The state ranks 34th among 50 states in pay.) Last year, a public opinion poll in California revealed that 8 out of 10 people agreed strongly the government should “ensure that all children, including those that are economically disadvantaged, have teachers who are fully qualified, even if that means spending more money to achieve that goal.” In fact, 83% would pay more money in taxes to help raise teacher salaries. (RNT poll)

Rewarding National Board Certification

Much has been done over the last several years to pay National Board Certified teachers more than others in efforts to break-up the lock-step salary schedule that treats all teachers alike. The NB assessment process has served as a way to address the growing consensus that more accomplished teachers need to be identified and rewarded differentially. Thirty-three states and at least 165 local districts now offer salary supplements and incentives for teachers who become “nationally” certified through the National Board for Professional Teaching Standards. Some states are offering up serious annual bonuses to those who have earned certification. In California, NBCTs can earn an additional \$20,000 (over four years) by teaching in low performing schools. In Dade County, Florida, NBCTs, who also mentor new teachers, earn a 20% state salary increase, and an additional \$5,000 bonus from the district. In South Carolina and Mississippi, NBCTs receive \$7,500 and \$6,000 annual supplements, respectively. NBCTs in North Carolina earn a 12% annual supplement to their salary.

Research on Career Ladders and Performance-based Pay

Paying teachers more on the basis of National Board Certification has also developed in part because of many past failed attempts to reward teachers with merit pay. These plans have tried to reward individual teachers primarily through the use of statistically linking teachers and their students’ achievement. Some past efforts have not been successful. For example, studies conducted over the last three decades have shown no achievement gains for those teachers being paid under a merit pay system and those who were not. In addition, in the past local evaluators did not have useful standards or the time or expertise to make reliable judgments about teacher competence (Murnane and Cohen, 1995).

Other research has shown that career ladder/merit pay plans that work well have the following qualities:

- The teaching standards used to measure performance must be clear;
- Teachers must see the assessments as being fair and evaluation and feedback should be frequent;
- The rewards must be significant;
- Teachers should have to continue to perform at high levels to maintain their pay and status
- Pay should be based on differences in roles and responsibilities; and
- Teachers need to be integral players in the design and implementation of the plan (Hawley, 1985).

Successful career ladder programs have been found to involve teachers deeply in school decisions and allow for master teachers to focus their time on inducting novice teachers into the

profession (Murphy and Hart, 1986). Other studies have revealed that performance-based pay programs work well when they are embedded in set of other important organizational developments, including strong school leadership, professional development, reliable analyses of student performance, and strong feedback (Odden, 2000). Unfortunately, very few of the merit pay and career ladder plans of the past met these criteria.

Some argue for teacher performance standards to be based solely on the base of standardized test scores of the students they teach (Kanstoroom and Finn, 1999; Hess, 2002). Indeed, there are many developments that need to be made to more tightly link teaching with outcomes and reward teachers for improving student learning. However, while current methodologies established by Sanders (1996) and others provide technical advancements that allow a better understanding of the effects of individual teachers on student test scores, numerous problems abound in using that data solely in high stakes decisions like merit pay. These issues include the fact that standardized tests can leave many teachers out of the running for merit pay while inevitably missing student test data in a given teacher's class (from large scale assessments) can confound high-stakes decisions.

In addition, other reformers oppose the use of test scores solely to judge individual teachers because of the grave need to provide more incentives for teachers to work with and learn from each other. Today it is often heard that school reform requires collaboration among teachers — and that no one teacher is or should be *solely* responsible for a specific group of students. This principle is well articulated in the business world as well. W. Edwards Deming, the father of Total Quality Management, claimed that individualized merit pay is the "deadly disease" of management because it focused on individual performance, not on the quality of a work team (Rischer, 1999).

These matters should inform more comprehensive approaches to pay and performance in education, with a number of worthwhile lessons from industry. For example, there is mounting evidence in the private sector — that as part of a total compensation strategy — pay-for-performance has increased productivity. Most large US companies now use some form of performance-based pay with at least some portion of their employees — an increase of 50 percent over the last 15 years. A recent National Alliance of Business report indicated that approximately two-thirds of these new pay systems have increased productivity or made other measurable improvements. Barrier (1996) found a positive relationship between employee motivation and the opportunity for career advancement.

Performance-based Pay Around the Nation

More and more, the pay for performance plans in the private sector draw on multiple measures. For example, beginning in 1994 the CNA pay-for-performance included a varied mix of 20 different plans based on individual performance and the success of individual strategic business units. Performance measures include both individual and "customer/shared goals" such as expense reduction and customer satisfaction. Bonuses range from a low of 3% to a high of 40% of salary. The company uses regular employee surveys and focus group sessions to ensure continuous improvement. At Motorola, salary increases are no longer based on seniority or longevity in a particular role. Employees can earn lump sum bonuses for additional responsibility

or demonstrations of using new knowledge (e.g., numerous published articles or a high number of patents received). Their program is part of a larger “recognition culture” that includes a variety of pay-for-performance tools (NAB report).

Over the last several years a number of states have enacted new performance pay mechanisms to reward teacher for increasing their knowledge and skill, student achievement goals, and other indicators such as decreased drop-out and higher attendance rates. In nine states—**Florida, Georgia, Indiana, Kentucky, Pennsylvania, South Carolina, Tennessee, Texas, and Utah**—some portion or the entire reward can be used for salary bonuses for teachers. **North Carolina’s** ABCs program, for example, rewards employees with \$1,500 per certified educator in schools in which student achievement exceeds predetermined improvement goals, and \$750 per certified educator in schools that meet these goals. **Florida** clarified requirements of performance pay policies as part of legislation that allows teachers to transfer from schools receiving an “F” grade on the state’s “report card” and gives bonuses for those teaching advanced placement courses. **Georgia’s** A+ Education Reform Act includes bonuses for teachers at schools awarded an A (\$1,000) or B (\$500) based on their new grading system.

A number of school communities are looking at more comprehensive performance pay models. Many are either drawing on the frameworks developed by **Allen Odden** and the **Milken Family Foundation** to develop differentiated salary structures that could offer some teachers up to \$60-100,000 per year. (See below)

Teacher Categories in Alan Odden’s Proposed Teacher Quality and Higher Salary Strategy Compared to those in Milken Foundation’s Proposed Teacher Advancement

Odden Category and Compensation	Requirements	Job Duties	Milken Category and Compensation	Requirements	Job Duties
Apprentice \$24,000 minimum	<ul style="list-style-type: none"> •Provisional license •PRAXIS II content and professional knowledge test 	<ul style="list-style-type: none"> •Complete entry year program •Work with mentor feed back 	Learning Guide (Elementary only) •\$15-21,000	<ul style="list-style-type: none"> •Associate’s degree •Other district measures •Writing assessment 	<ul style="list-style-type: none"> •9-month teaching year •Guided professional growth during school day •Supervise student work as orchestrated by higher-level teachers •One period a day for collegial instruction improvement and curriculum development
Novice \$30,000 minimum	<ul style="list-style-type: none"> •Professional License •PRAXIS III •Reading Instruction •Competency •Assessment •Nonrenewal if not Teacher within 5 years 	<ul style="list-style-type: none"> •Determined by district 	Associate •Elementary: \$25- 35,000 •High school: \$25 – 40,000	<ul style="list-style-type: none"> •Bachelor’s degree •Assessment of basic skills, subject expertise and classroom demonstrations 	<ul style="list-style-type: none"> •H.S.-teach 5 academic classes •Elementary – team teach with mentor •Develop expertise •Develop portfolio •One period a day for collegial instruction improvement and curriculum development
Teacher \$35,000 minimum	<ul style="list-style-type: none"> •ASCD Basic rating •Non-renewal if not “Career 1” after 5 years 	<ul style="list-style-type: none"> •Determined by district 	Specialist •Elementary: \$25,000-47,000	<ul style="list-style-type: none"> •Bachelor’s degree with at least provisional teaching certificate in area of specialty 	<ul style="list-style-type: none"> •Team teach with mentor •Construct benchmark lessons •Develop expertise •Develop portfolio •One period a day for collegial instruction improvement and curriculum development
Career – 1 \$40,000 minimum	<ul style="list-style-type: none"> •ASCD “Proficient” rating 	<ul style="list-style-type: none"> •Determined by district 	Mentor •\$30 – 60,000	<ul style="list-style-type: none"> •Bachelor’s degree, Master’s preferred •Mentor teacher certificate •Portfolio and classroom demonstrations •Minimum of 2 years teaching experience •Recommended by mentor 	<ul style="list-style-type: none"> •H.S.- teach 4 academic classes •Team teach •Collaborate to create benchmark lessons •Provide training •Observe an peer assistance •Mentor associates •One period a day for collegial instruction improvement and curriculum development
Career – 2 \$50,000 minimum	<ul style="list-style-type: none"> ASCD “Advanced” rating 	<ul style="list-style-type: none"> •One period a day for collegial instruction improvement and curriculum development •Eligible for additional compensated leadership responsibilities, such as mentoring 	High School Adjunct Associate •\$25 – 40,000 or \$6,025 per course	<ul style="list-style-type: none"> •Bachelor’s with extensive specialized training and experience •Evidence of teaching expertise 	<ul style="list-style-type: none"> •Primary occupational position outside of education and in field of expertise •School provides induction program and examination •Teach academic classes in field of expertise based on curriculum developed by mentor and master teachers •One period a day for collegial instruction improvement and curriculum development
Accomplished \$60,000 minimum	<ul style="list-style-type: none"> National Board Certification 	<ul style="list-style-type: none"> •One period a day for collegial instruction improvement and curriculum development •Eligible for additional compensated leadership responsibilities, such as mentoring •Assist in comprehensive reviews of other teachers 	Master Teacher •Elementary: \$55-80,000 •High school: \$58 – 100,000 for 80% time	<ul style="list-style-type: none"> •Master’s degree, Ph.D. preferred •Classroom demonstrations and external observations •Minimum of 5 years as mentor •Expertise in content, curriculum development, student learning, assessment •Proof of contribution to profession 	<ul style="list-style-type: none"> •10 hours/week teaching students, 11-month school year •H.S. – teach 2 classes •Oversee other teachers during 3 class periods •One period a day for collegial instruction improvement and curriculum development •Facilitate curriculum development •Lead staff development •Conduct peer evaluation •Provide demonstration lessons •20% of time outside of school at high school level

Pay based on knowledge, skill, and performance can be found in a number of prominent school districts that include Cincinnati, Denver, and Douglas County (CO).

Cincinnati, Ohio

In early 2000, drawing on Odden's framework, the **Cincinnati** school district and teacher unions crafted a plan for overhauling a teacher's career path, using standards established by the National Board for Professional Teaching Standards. While the teacher's union voted in the spring of 2002 to reject a plan that would base teacher pay on performance, the possibility for such a plan is not dead yet. The union has said it is still open to exploring other options around a pay-for-performance plan, but that several major concerns about implementation and evaluation would need to be addressed before they would support such a proposal.

Cincinnati's experience with its new pay-for-performance teaching plan broke new ground for rewarding teachers who meet specific, high standards in 16 areas of professionalism and helping students learn. The process includes administrators and peer review, along with detailed portfolios focused on student and teacher learning. Teachers can advance on a career ladder and earn additional money for particular skills, including proficiency in certain professional development courses as well as dual licensure in different subject areas. Teachers can also fall back on the ladder if the frequent, in-depth evaluations determine a drop off in performance.

New evidence suggests that the more professionalizing approaches the district took paid off in terms of student achievement dividends. In a recent report, Cincinnati's efforts to enact its groundbreaking performance-pay program revealed that students of teachers who were identified as top performers for their instructional skills yielded higher achievement in their respective classrooms. Using new evaluation tools built upon detailed evaluations, including teacher portfolios and classroom observations, the district's research and evaluation surfaced desired anticipated results. The study revealed that students whose state test scores were below average were taught by Cincinnati teachers who earned low evaluation ratings. In contrast, the students of high-achieving teachers earned better-than-average scores. Another important finding is that the district's experienced teachers fared much better in producing student achievement gains. An analysis of the evaluation system's first year found that 84% of the teachers who ranked in the top two categories had more than 17 years experience while only 2% of the new or inexperienced teachers were identified as "distinguished." (See the story on the evaluation of the program in EdWeek at <http://www.edweek.com/ew/newstory.cfm?slug=29cincy.h21>).

Denver, Colorado

Denver is in the middle of a four-year pilot program that will evaluate how pay-for-performance helps improve student achievement. The effort will measure individual teachers' effects on student achievement as part of determining a teacher's bonus. With a \$1 million foundation grant, the district, with full support from the union, is comparing three different means of assessing teacher performance: increases in student performance

on standardized tests, increases in student performance on teacher-developed assessments, and increases in teachers' skills and knowledge.

Douglas County, Colorado

Finally, the Douglas County model is one of the longest standing in the nation. Started in 1993, the approach draws on a new system of base pay and voluntary bonus incentives that include rewards based on individual teachers' impact on student achievement. For example, teachers can earn up to \$3,000 in bonuses for developing new skills and group accomplishments; they can apply for a \$1,000 bonus as a master teacher and up to \$750 for additional site responsibilities; and they can earn up to \$1,600 for additional district responsibilities and for school-based accomplishments. Finally, each school can voluntarily propose a school-wide project for improving student performance. Submitted at the beginning of the year to a committee of teachers and administrators, the proposal must identify planned activities and evaluation mechanisms. Bonuses are awarded to schools that successfully complete the activities, whether or not student achievement improved. This stipulation is intended to award creativity, innovation, and risk-taking. In the first year, every school participated (although a few individual teachers within the schools did not). The award per teacher depends on the number of schools and teachers that successfully complete the process.

Milken Family Foundation Teacher Advancement Program

Currently, 13 schools in **Arizona** and **Florida** are drawing upon the framework created by the Milken Family Foundation and are participating in their Teacher Advancement Program (TAP). TAP addresses a number, but not all of the teacher development issues. Their approach emphasizes multiple career paths, market-driven compensation, performance-based accountability, ongoing, applied professional training, and expanding the supply of high quality educators. Several pilots are now working on models in South Carolina. Although no progress has been reported as yet, many reformers are looking to the TAP as a model for reforming teacher compensation systems (See the Milken Family Foundation Website at <http://www.mff.org/tap/tap.taf>).

One way that several districts are beginning to draw upon and compensate experienced, master teachers is to give them new status as peer reviewers and new opportunities to support and assess their colleagues. In **Montgomery, Maryland**, the program is designed to give new teachers and struggling veterans the help they need to become successful as well as counsel poor-performing teachers out of the profession. The peer review panel consists of six teachers and six principals. The program is equally led by both the school administration and the teachers' union in an attempt to change the structure of the profession and give teachers more autonomy in establishing and enforcing teaching standards. The local Montgomery teachers union is one of over 20 teachers union locals making up the Teachers Union Reform Network, which is working to forge improved, collegial relationships between teachers and school administrators.

The peer review program and the new evaluation system are being phased in gradually over three years. The school system hired 20 consulting teachers this past year for the peer review program at a cost of about \$900,000. In 2002, it plans to hire 20 more and

then 20 more the year after that, so that by the end of three years every new teacher the district hires will get a consulting teacher. *Peer Review Panels have already recommended that 43 out of 158 new teachers in the program be dismissed, more than five times the usual number of new teachers who are fired after their first year.* Thirty-two of the teachers have resigned rather than be fired. Now, principals are no longer solely responsible for assessing teachers and have more support from teaching colleagues in having to remove poor-performing ones.

Statewide Initiatives

States that have designed or implemented new compensation policies or plans include Arizona, Iowa, Kentucky, Maryland and North Carolina. A brief description of each state initiative follows.

- **Arizona:** The voters of Arizona approved performance-based pay in 2000 through Proposition 301. Districts implement the plans, choosing from various performance measures. Some districts tie performance pay to student achievement gains, others to professional development activities by teachers. Additional goals tied to performance pay have to do with staff and student attendance, school climate, parent satisfaction, satisfactory teacher evaluations and similar goals. While this approach to compensation is a relatively new initiative in Arizona, the variety of district plans and performance targets that result from broad discretion apparently given to the districts make it difficult to determine any overall impact on state student achievement resulting from the state initiative. Possibly a fair description of the Arizona policy is a state-funded plan to support district-level compensation system changes.
- **Iowa:** A statewide initiative, whose policy development began in 2000, includes “variable pay” for teachers tied to student performance. Under the proposed design, this pay incentive plan will comprise up to 15% of compensation. Receiving the rewards will depend on student learning gains as measured by test scores. Local districts will design their own plans, using state guidelines as a “template.” It is too soon to have evaluation data on the impact of this approach. ECS reports that this is a “whole school incentive” plan, much like Kentucky and North Carolina in its conceptual design—linking individual teacher rewards to overall school performance. As it now stands, the Iowa plan would provide up to \$100 in state funds per student per school. It is not clear from available materials how this amount of money, aggregated across a school’s total enrollment, could support a 15% bonus to all teachers in that school. For 2001-02, this is a voluntary plan for pilot districts.
- **Kentucky:** Kentucky’s comprehensive approach to school reform has included, from the beginning, attention to accountability and assessment as part of the general strategy to improve student achievement. Schools are rewarded for improvements in student achievement based on student test scores, average achievement scores for the students at a school, and an improvement goal for the school itself. Certified staff at a school that has met its target and is eligible for reward decide how to use the funds that come to the school as a result of its success. Changes in this procedure have taken place over time. One analysis of the impact of these school-based performance

systems suggests, *“Providing awards to schools rather than to individuals is less likely to have a motivating effect on individuals because the linkage between the teachers’ efforts and the reward is quite indirect.”*

- **North Carolina:** The approach in North Carolina is called “school-based performance awards.” This program is part of an overall state accountability system described in that state as the “ABCs of Public Education.” Rewards and funding take place at the school level, not at the district level. The North Carolina policy is based on measures of student achievement and, according to CPRE, “uses a relatively simple set of performance measures.” The measures are different for the various levels of schools in the state—e.g., elementary and middle, and high schools. Over time, additional measures have been added at the high school level as the state began testing other subject areas. Rewards go to entire schools, based on the concept of value-added. This means that gains and eligibility for rewards are determined on the basis of student performance changes from year to year. Individual student test results are the basis for calculating improvement - not average scores or an overall school improvement (e.g., percent meeting satisfactory standards). Schools do not compete against each other for limited reward money; they compete against themselves using individual student test results as the comparison. The program has been well funded and initial evaluations suggest it does make a difference in promoting student-learning gains over time.

While the design and implementation approaches may differ significantly between state- and district-level initiatives, the case studies and lessons learned from district experience would be valuable in any effort to develop state compensation plan initiatives. For one thing, an important—but often overlooked—lesson in any reward system is that the real action of education takes place in classrooms. Performance or incentive systems should be connected to state or district student achievement goals, which ought to be the key drivers of any initiative in this area, with the day-to-day work of teachers in classrooms. It is increasingly clear from research across the country that the school is the unit of change in student learning gains. The work of Just for the Kids in Texas and the recent analyses by the Education Trust (www.edtrust.org) make a compelling case for the proposition that effective teaching and successful learning are school-based phenomena. The same has been observed through evaluations of the Alabama Reading Initiative (www.teachingquality.org).

The best state policies seeking to tie overall state student achievement goals to teacher behavior are sensitive to the fact that these policies have to be grounded in the everyday reality of school settings and classroom environments. Knowledge and skills improvement by teachers, for example, can be enhanced or inhibited by the quality of school leadership and the extent to which the school is well organized as a learning community. A variety of state policies promote or undercut these “enablers” of change. The same can be said for school performance rewards. Systems that give rewards for marginal performance gains encourage schools to go for the “low-hanging fruit,” which is often the students just below the acceptable performance category. Real performance improvement moves all students up the ladder of success—those at or near top are pushed

and supported to higher levels of achievement, while floundering students receive the high expectations and quality instruction needed to help them realize their full potential. Teaching quality requires a school environment that expects, supports and rewards all members of the learning community—students, teachers, administrators and parents.

For more information about differentiated compensation, see NGA's special website on the issue at <http://www.subnet.nga.org/incentivepay>.

6. To which states should we be looking for innovative approaches to ongoing professional development that is aligned with standards for student achievement? What are these states doing, and what evidence is there that their initiatives are working (i.e., improving student and teacher performance)? In these states, what role are institutions of higher education playing?

Research on Professional Development

More policy makers are focusing on professional development as a means to improve student achievement. Data are more available as to the importance of professional development, what professional development looks like, and the extent to which teachers receive quality professional development. A recent survey revealed that only 28 percent of teachers report that they feel very well prepared to use student performance assessment techniques, and 36 percent reported feeling very well prepared to implement state or district curriculum and performance standards (NCES, 1999).

Nonetheless, not all professional development is created equal. Emerging research demonstrates that the quality and duration of professional development programs are important determinants in improving teaching practice and raising student achievement. Yet most state policies do not attend to these two critical components (Killion, 1999). States that require professional development typically mandate “clock hours” with little regulation on the types of activities that qualify for certificate renewal. Likewise, school districts, with minimal guidance and minimal funding, tend to rely on less effective one-time in-service and workshop models.

However, while 96 percent of public school teachers participate in some form of professional development during the school year (NCES, 1998), very few educators say that they encountered the types of opportunities that have been demonstrated to promote significant and sustained professional learning. For example, only 30 percent of teachers participate in professional development that involved in-depth study in a specific field, and only 15 percent receive nine hours or more of this type of training (Darling-Hammond, 1997). New data from the School and Staffing Survey indicate that these trends are improving. For example, in 1999-00, 48% of the nation’s teachers had 9+ hours of professional development in subject matter in their previous year of teaching (up from 15% in 1993-94). In addition, 25% of the nation’s teachers had 9+ hours of professional development in student assessment, up from 11% in 1993-94 (NCES, 2002). (State-level data are available for Ohio at this time).

The National Partnership for Excellence & Accountability in Teaching (1999) identified eight research-based criteria for effective profession development. These criteria are:

- Based on analyses of the differences between standards and actual student performance;
- Involving teachers in the identification of their learning needs;
- Primarily school-based and built into the day-to-day work of teaching;
- Organized around collective problem solving;
- On-going and involve follow-up support (with support from external sources);
- Based on multiple sources of information on student outcomes, instruction, and the implementation of lessons;
- Focused on understanding theories underlying knowledge and skills to be learned; and
- Connected to an overall school change process focused on improving student learning.

Over the last decade the education research community has devoted increasing attention to understanding what and how teachers learn and the implications for instructional improvement and student learning. There is increasing, albeit incomplete, evidence of the kinds of professional development that leads to student achievement gains. Recently, a few studies have surfaced that the *most effective professional development focuses on the specific content students will learn and the specific difficulties student encounter in learning the content* (Kennedy, 1998).

One such study by Cohen and Hill (1997) surveyed 1000 elementary school teachers in California and found that schools were more likely to have high student achievement when teachers took part in professional development that focused on specific curriculum issues (teaching fractions, for example). Equally, the teachers in higher achieving schools had opportunities to work with other teachers, use research methods to study what their students did and did not know, and to improve their lessons based on what they learned. When teachers spent most of their staff development time studying general education strategies, their students did not perform nearly so well. These findings suggest that professional development needs to focus on the analysis of curriculum and student responses to it, rather than on generic (one size fits all) teaching behaviors. Cohen and Ball (1999) have noted that teacher learning that is linked to student achievement may hinge on the “strategic documentation of practice” that “cultivates (their) capacities to investigate teaching and learning” (e.g., assessing student work samples and video tapes of focused lessons on teaching two-digit multiplication).

A recent large-scale study, utilizing surveys and case studies, surfaced six critical factors (underlined below) for creating effective professional development that is linked to the development of teacher knowledge and changes in teaching practices (Birman, Desimone, Porter, and Garet, 2000). The researchers concluded that:

Professional development should focus on deepening teachers’ content knowledge and knowledge of how students learn particular content, on providing opportunities for active learning, and on encouraging coherence in teachers’ professional development experiences. School and districts should pursue these

goals by using activities that have greater duration and that involve collective participation. Although reform forms of professional development are more effective than traditional reforms, the advantages reform activities are explained primarily by greater duration of the activities (Birman, et. al., 2000, p. 32).

The investigation of Birman, et al reveals how structural characteristics (form, duration, and participation) affect core features (content, active learning, coherence), which in turn predict increases in teacher knowledge and skills, and changes in teaching practices. However, their surveys and case studies revealed a mix of high and low-quality structural and core features — and that most professional development in the Eisenhower grant program is:

- Traditional in form,
- Less than a week in duration,
- Increasingly focused on content, but with very little opportunity for actively learning the content, and
- Increasingly coherent with state and district standards, but rarely cohering with other aspects of the system (e.g., teacher evaluation and building on other professional development).

A new study of further investigation into this project released in summer 2002 examines the effects of professional development on teacher's instruction, particularly in math and science. This study showed that professional development focused on specific instructional practices increases teachers' use of those practices in the classroom (Desimone, et al, 2002).

The literature, such as the findings revealed previously, has surfaced a high degree of belief regarding effective professional development. While built from a growing consensus in the field and from emergent research, however, most of the claims supporting the linkage of effective professional development to student achievement are largely unsupported by rigorous empirical study (Cohen and Ball, 2000).

Learning Opportunity

Little (1993) indicates that however much the professional development training model has improved over the years, it still may not be able to address the range of professional development needed today. She explains that the improved training model could profitably be applied to further certain aspects of the reform movement, but that the training model is limited in that it most effectively addresses transferable teaching skills. Yet the range of reform agendas includes subject matter reforms, issues of equity, assessment, school structure, and professionalism. Professional development to address these agendas may require alternative models, which engage teachers as intellectuals learning and working through issues. Little found that teachers engaged productively in subject specific associations, special institutes and centers, subject specific projects, and university and school collaboratives implement greater changes in practice than those who do not. Little (1993) also indicates that providing opportunities for teacher inquiry/research projects shows promise for teacher change. Sykes (1996), viewing

professional development as both an area of needed reform and as a requirement in achieving reform, proposes that professional development options be extended beyond the skills and acquisition and training model to include an inquiry model, which would be better suited for addressing the uncertainties of reform.

Teacher Beliefs and Attitudes

What a teacher knows and believes about himself and his students, along with the more general topics of teaching, learning and curriculum, is important when examining how teachers respond to professional development. It is important that policymakers consider the relationship between implementation and innovation (a new curriculum, instructional practice, a policy, a structure, and idea), as well as the fact that innovative implementation often requires altering behaviors and beliefs (thinking). Nias, Southworth and Campbell (1992), in a study of whole school curriculum development, pointed to 1) the central importance of teachers' learning, individually and in relation to colleagues; 2) how changes in teachers' beliefs and practices toward greater 'sharedness' evolve over time and how independence and interdependence co-exist in dynamic tension; 3) how the working conditions for continuous learning and continuous development of whole school curriculum inhabit or facilitate the process; and 4) how complexity, unpredictability, and constant shifts internal to the school, as well as in the external policy environment are inevitable.

In addition to the availability of a rich learning environment, teachers' knowledge, beliefs and attitudes also influence how and what they learn from professional development opportunities (Spillane & Thompson, 1997). Pajares (1992) concludes that beliefs are given greater weight than knowledge in the decisions teachers made regarding development opportunities and implementing new practice because beliefs act as a filter for ideas to be considered, resulting in resistance to change. Raymond, Butt, and Townsend's (1992) study noted that teachers shape their pedagogy around core ideas, upon which they base their sense of commitment, the direction of their professional development, and given the opportunity, the selection of congruent teaching contexts.

Teachers' beliefs about their efficacy in teaching less successful groups of students have been correlated to changes in practice (Ashton & Webb, 1986). Guskey (1985), illustrating the importance of the role that student's play in teacher change, explains that teachers validate their practices pragmatically, keeping what works and discarding what does not. Teachers make decisions regarding professional development and change practices because they want to become better teachers. He suggests that if teachers could be persuaded to try a new practice that resulted in improved student outcomes as a result, teachers would implement and sustain changes in practices. Fullan's (1995) research reveals that changes in teacher behavior precede rather than follow changes in belief. He noted that:

Teachers who wanted to improve their practice were characterized by four attitudes: they accepted that it was possible to improve, were ready to be self critical, and to recognize better practice than their own within the school or

elsewhere, and they were willing to learn what had to be learned in order to be able to do what needed or had to be done (Fullan, 1993, p.73).

State Action

Few incentives exist at the state level to facilitate staff development opportunities that fit this vision, despite a spate of legislative proposals over recent years. State professional development requirements for teachers to renew certification do not channel teachers into high quality activities. Although 32 states mandate professional development for teacher certificate renewal, most requirements are for “clock hours” of staff development, with few regulations guiding the quality and content of these offerings. Despite the state education agency reviewing components of the professional development requirement in 33 states, even minimal standards regarding acceptable criteria are often absent from the state review process. In many states, virtually any kind of formalized learning experience can count towards a teacher’s clock hours; not all such experiences have much relevance to the problem of teaching practice (Hirsch, 2001).

Uncertainty surrounding staff development funding exacerbates problems created by broad requirements. Only 18 states have specific allocations for professional development activities (NASDTEC, 1998). The amount and the regulations that accompany this funding vary widely. Even with a specific state allocation, it is hard to get a grasp of professional development expenditures. Staff development comes from a variety of budgets and programs at the local district, state and federal level, making it difficult to determine overall spending levels and revenue streams. This uncertainty around funding often influences staff development delivery. While demonstrably less effective than the quality professional development outlined above, in-service days and school or district workshops remain the most common form of professional development activities. These activities are not conducive to content-rich, job-embedded opportunities, but they are less expensive than other methods and involve less release time and restructuring of the school day.

Some states have begun to create or enhance statewide professional development infrastructures to address some of these concerns (Hirsch, Koppich and Knapp, 1998).

- The Outstanding Schools Act of 1993 established nine regional Professional Development Centers in Missouri. The state mandates that one percent of the total district budgets be set aside for school-based professional development.
- Vermont pioneered an initiative that links state academic standards with assessments and professional development by training teachers statewide to grade portfolios of student work. Teacher networks communicate across the state regarding grading sample student work and ways to achieve the results envisioned in state standards.
- The Kentucky Education Reform Act of 1990 increased professional development activities and funding. KERA requires local school districts to provide four days of site-based professional development annually and provides \$24 per student in funding for this purpose. In 1997 the state required the Department of Education to assist

districts and schools in the development of long term school improvement plans that include professional development strategies to address curriculum content.

These actions are especially important when coupled with research demonstrating that the creation of teacher professional development programs locally may depend heavily on the degree to which the state makes these activities a priority and the level to which it provides financial support ensure their implementation. Without specific state guidelines and policies, the wide latitude afforded school districts in setting professional development topics and expenditure levels can lead to large inequities between districts. In Colorado, for example, spending on staff development ranged from .001 percent of total district funds to 7 percent, with many teachers left without access to high quality professional development opportunities, especially in more isolated areas.

State legislatures have been rightfully hesitant to be overly prescriptive in setting professional development policies because of the school- and district- centered nature of staff development. However, more guidance from the state may assist in providing the resources and incentives needed to facilitate the creation of high quality opportunities for all educators. The standards are guided by three questions:

1. What are all students expected to know and be able to do?
2. What must teachers know and do in order to ensure student success?
3. Where must staff development focus to meet both goals?

NSDC is currently working with the National Conference of State Legislatures to create state professional development councils to oversee implementation of professional development standards.

7. What states are doing innovative things to create more effective teaching and learning environments? For example, what's being done to redesign teachers' in-school time, facilitate collaborative planning or extend the school day or school year? What other changes are being made?

While there is very little evidence of school redesign being implemented on a statewide level in the nation, much of this exemplary work is being done by local districts and schools. The following are some of the most promising examples.

- Rochester: The Rochester Career-in-Teaching program supports some release time for mentors and novices to meet together. 60% of the mentors are school based, meaning they mentor 1 or 2 teachers in their own school and receive no release time; 40% of the mentors work with teachers who are not at their own school. They are released for up to 40% of their work hours at the secondary level for a full caseload of 4 new teachers, and at the elementary level they usually share a position with another teacher, in effect giving them .5 release time. Novices generally meet with mentors during lunch, prep periods, and after school. In addition, mentors and novices can draw on a pool of substitute days to do additional work together, visit other teachers' classrooms, or attend workshops. Each pair has 8 to 10 of these "CIT" days where they can hire a substitute for one or both of them.
- Central Park East/International High School
A great deal has been written about the fact that teachers need substantial time together in order to create new practices, engage in shared problem solving around student learning and to get to know their students better. Studies of teacher development in other countries, notably China and Japan, point out how teachers — with a great deal more time allowed during the structure of their school day — appear to become more effective at teaching and assessing student work by their collaborative work together. Some schools, by spending most of their funds on classroom teachers and having more of their administrators serve as classroom teachers (at least part-time, including principals), are organizing schedules so that teachers have more time with the same students and with each other. Darling-Hammond and Snyder have identified several schools. They write:

For example, at International High School in Queens (NY), the principal, assistant principals, and all other staff work with students in advisories. Guidance counselors are attached to teaching teams and work with students in classes, seminars, and group sessions. The librarian is a classroom teacher who teaches classes and works with the school's media resources. Full-time teachers comprise 67% of the staff as compared to only 58% at traditional comprehensive high school in New York City. Central Park East Secondary School offers a model with even less specialization: there are no guidance counselors, attendance officers, assistant principals, supervisors or department heads. There is one art

teacher for the school; one foreign language teacher oversees the work of others who are hired on an hourly contract basis; and a librarian is shared with another school in the same building. The co-directors teach classes themselves and have responsibility, as do all teachers and other professional staff, for counseling students in advisories. Virtually everyone at the school works directly with students, and full-time teachers comprise 73% of all staff.

Teachers at both schools have significantly smaller pupil loads than "Big School" teachers, as well as more shared planning time. At International, interdisciplinary clusters organize classes that are 70 minutes long and average 25 students each. Because of the longer duration, classes are offered 3 times per week so that students get as much instructional time, but teachers teach fewer courses. This gives them fewer total students, fewer "preparations," and more time to engage students in active learning and group work in class. These arrangements result in an average pupil load of 75, less than half that of teachers at "Big School." It also allows teachers at least twice as much time per pupil (an average of 13.6 minutes per student per week).

At CPESS, teachers in grades 7-10 teach two interdisciplinary classes (math/science or humanities) that meet for nearly two hours daily, four times per week. With class sizes of 18, this results in a total pupil load of 36, less than one-fourth the load of a teacher at "Big School." Advisories of about 15 students meet for about 3 hours per week and are often comprised of the same students teachers are working with in class. This organization results in extensive time with individual students: an average of 33 minutes per student per week. Senior Institute (grade 11-12) teachers work in an even more personalized fashion: they teach two classes and conduct 5 hours of advisory each week, and then spend the remainder of their time coaching students one-on-one on their portfolio work. Senior Institute students are involved in courses and internships at local colleges and work sites as well as their coursework in the school.

Shared time for planning, professional development, and governance is much more extensive in the restructured schools. At International, cluster teachers share 70 minutes of planning time daily and a half day each week for staff development and collective planning while students are in clubs amounting to a total of 6 hours of shared time each week.

At CPESS, teachers meet once a week for a full morning with their disciplinary teams while students are engaged in community service placements. They meet with other house teachers twice a month during an extended lunch and planning period, and with the total staff twice a week. Altogether, teachers average 7.5 hours a week for joint planning, in addition to 5 hours weekly of personal planning time.

Through a combination of staffing choices (nearly everyone teaches), role designations (teachers take on a broader array of responsibilities), scheduling

practices (block schedules with longer periods and fewer classes), and curriculum decisions (a core curriculum with no tracking), these schools are able to marshal their resources to enable more intense and intimate work between and among students and teachers.

The results are stunning at both of these schools. They have high graduation rates (over 90%) and high college matriculation rates, well above average attendance, and low drop-out rates

Central Park East Secondary School (NY)

- 450 7-12 students, 60% FRL, 25% special education
- 2 hour blocks of humanities and math/science
- 12 hours teacher planning time per week (7 is common)
- Differential staffing
- 90% graduate and go to college

International High (NY)

- 475 9-12 students, 75% FRL
- All enter scoring below 20th percentile English proficiency
- Interdisciplinary curriculum/ multi-age grouping
- Teachers teach no more than 75 students per term
- 6 hours common planning time per week
- 1% drop-rate (compare to 30% citywide)
- 95% graduate and go to college

Other examples:

Quebec Heights Elementary (Cincinnati)

- 500 K-6 students, 70% Title I, 15% special education
- Small, multi-age heterogeneous groups for three years
- Reading groups of 8
- Test scores improving faster than district average (ALL students)

Douglass Elementary (Memphis)

- 475 K-6 students, 88% Title I, 17% special education
- Success for All: Model that focused on external standards, diagnostic testing, flexible student grouping, intensive professional development, and teacher leadership
- Percentage of 2nd graders scoring at or above median in language arts moved from 17% to 59%

Lyons Elementary (Boston)

- 90 K-5 students, 80% Title I, 33% severe emotional problems
 - Class size of 15
 - Extended day, 7 am - 5 pm
 - Differential staffing (highly trained teachers)
 - 100% of students reading on grade level
 - Test scores improving faster than district average
- **PAIDEIA:** Paideia's purpose is to prepare each student to earn a living, be a citizen of this country and the world, and pursue life-long learning. Paideia educators believe that high academic achievement is expected of all students and that it is society's duty to provide that opportunity. A fundamental belief is that universal, high quality education is essential to democracy. Instructional goals are based on acquisition of knowledge, development of intellectual skills, and enlarged understanding of ideas and values. These are addressed through three instructional approaches:
 - Didactic instruction: teacher lecturing, which provides opportunities for "acquisition of knowledge";
 - Coaching: one-on-one instruction from the teacher, which takes place while students work independently at their own level and pace; and
 - Small group seminars: which usually use the Socratic method of questioning to explore issues in greater depth.

Schoolwide restructuring is necessary to fully implement all three instructional pieces, as Socratic seminars often require longer class periods (up to 2 hours), while coaching may call for smaller classes enabling teachers to spend more time with individuals. The National Paideia Center advocates schools' using locally developed standards. Schools are supported to align program goals and instructional practices to achieve local standards for students.

Results

Evaluations of the Paideia model in several districts have included data on student achievement. For example, an evaluation comparing Paideia and non-Paideia students in two Chicago high schools found that Paideia students scored higher in reading comprehension, math problem-solving, science, and writing. From 1994 to 1996, the number of students from 12 Paideia schools in Guilford County (North Carolina) who passed the state's fourth-grade writing test increased by 27 percentage points, compared to a statewide increase of 17 percentage points. And at a middle school in North Carolina, writing test scores of eighth-grade students who had taken weekly Paideia seminars for three years showed a greater increase over that period than scores of eighth-graders statewide. Gains for minority students at the school were greater than gains for the class as a whole. Seminar implementation also has been studied. The flexibility of the Paideia approach was perceived as both an "advantage and a hindrance" (Herman & Stringfield, p. 24) because teachers could depart from or alter the program, potentially diluting its effectiveness. Teachers in this same study reported that students improved in critical thinking and in their ability to express themselves clearly. Test scores at Paideia and non-Paideia schools in the study remained the same. Further research is being planned. The Guilford County School Board recently commissioned a \$250,000 study to be completed over four years

(1997-2001) by the School of Education of the University of North Carolina at Greensboro.

- **National Humanities Center:** The National Humanities Center has developed a new type of professional development seminar run by and for teachers in collaboration with scholars from arts and sciences faculties around the country. Its distinctive feature is that it helps teachers build faculty development seminars that respond to their interests and needs. It spans two academic years. In the first, teachers in a school come together to frame a topic for collective study. The Center assists them by supplying study material and organizing topic selection seminars. When the participants have formulated a rationale for their topic and defined lines of inquiry, the Center brings them into collaboration with consulting scholars from local colleges and universities. The consultants are not on hand to tell the teachers what they need to know, but rather to identify resources--books, films, articles, paintings, etc.--that will enable the teachers to explore their topic with depth and sophistication. The consultants help the teachers develop a syllabus that transforms their topic into a rigorous seminar. At the end of the planning year the teachers and consultants receive the seminar texts for study over the summer. During the second year, the teachers and consultants together explore their topic in a series of regularly scheduled seminar sessions. The Center then began to focus on teachers certified by the National Board of Professional Teaching Standards and other top-notch teachers in an attempt to institutionalize these seminars in the schools.

One clear advantage of this model is its cost-effectiveness. The faculty development seminars, with teachers meeting in the school at which they teach, cost from \$150 to \$250 per teacher. Independent evaluators point out that these seminars can change the culture in a school, building a more active, confident and responsible faculty.

- **Ohio's Venture Capital Program**

Venture Capital. Several years ago the National Commission on Teaching and America's Future began researching the effects of Ohio's state-level efforts to improve student achievement. The case study work surfaces a number of important issues surrounding the implementation of state-level effort to redesign schools that would support student achievement gains. The following is excerpted from the case study.

The Venture Capital initiative in Ohio supported the idea that a small amount of money, used in a discretionary way, could help energize schools. The key to the program was seed money, discretion to use it to meet building-level needs, and a release from state regulations.

Beginning in FY 1994-95, Venture Capital grants were made available through state funding from the Ohio General Assembly to support school improvement, and provided eligible schools with approximately \$25,000 per year over a five-year period to plan and implement strategies designed to promote effective change. The major purpose of Venture Capital grants was to provide a school improvement investment through the school community to create and develop high performance schools in which all children

learn. Teachers were expected to play an important role in the school improvement process through greater involvement in decision-making and instruction. The challenge was to work with a community of learners to break down the barriers to progress and focus on making schools better places for teachers to teach and for students to learn.

Recipients of Venture Capital funds were encouraged to complement and extend successful efforts currently being implemented in the districts as well as offer opportunities to explore new dimensions—including Peer Assistance and Review and Project Discovery.

As the Venture Capital schools were intended to be data-driven models, school learning communities established “Indicators of Success” that were submitted with the original application. These indicators were to be the center of the evaluation, consisting of tangible, specific statements describing the intended outcomes.

Data showed that Venture schools were more likely than other schools to use indicators and collect data to identify improvement needs, but they were not using them enough to result in improvement. Survey results show that the Venture schools were not using their indicators as a central role in the decision-making process, and were not collecting data about these indicators (Synergetic Development, Inc, 1998).

An overview of success for Venture Capital schools would indicate that approximately 25% of the schools were able to generate evidence of change in student achievement, 50% had anecdotal evidence that the program had positive results, but 25% had no evidence at all. Our case work revealed that many policy makers believed that with “better data collection and a better evaluation plan, they might have been able to obtain hard evidence and that “legislators and the Department of Education have lost interest because of evaluative data.”

Perhaps the fatal flaws in the Venture Capital design were the lack of clear criteria for school redesign work and the lack of resources to support data collection and analysis at the school level. The state department of education never established “rigorous criteria for selecting the Venture Capital sites, which confounded the kinds of expectations expressed by both policy makers and practitioners.” Similarly, educators in the schools who were expected to gather data and make data-based decisions were never prepared for the kinds of data collection and analysis required for describing program effects and long-term political support.

8. What states have designed and implemented innovative policies and programs designed to improve the effectiveness of principals and other school leaders? What about teacher leadership programs and the development of career paths for teachers?

The Bill and Melinda Gates Foundation has invested \$100 million in a new initiative to provide superintendents and principals access to quality professional development, focusing on whole systems improvement and creating a high-performance learning environment through technology integration. Through a grants program, the Foundation now has projects up and running in each of the 50 states. Many are in the early stages of development, but the following programs are some of the most promising in progress.

Florida

Florida Leaders.net is a statewide educational leadership initiative to provide school leaders with support in implementing Florida's school accountability legislation, which includes incorporating a school-wide technology plan into the required school improvement plan. The initiative is creating an interactive professional network of school leaders using technology to improve student performance. A network of 60 retired principals provides one-to-one coaching and mentoring support to Florida's principals. Up to 1200 principals per year attend a local 3-day training institute conducted by 120 master trainers to hone their skills in technology and leadership. All participants receive a Palm handheld computer (and training) so they can model this innovative use of technology in their schools as tech savvy educational leaders.

Georgia

It's About Leadership

Leadership is work that cannot be done alone. It's About Leadership (IAL) brings principals and superintendents together to accomplish their leadership goals. IAL offers a wide variety of face-to-face and technological learning opportunities including participation in statewide conferences as well as sustained learning and support in smaller, regional cohorts. It also offers an Internet delivered resource bank focusing on critical leadership skills. This resource bank allows participants independent, on-demand access to multiple sources of information. All IAL participants work toward increasing the success of students through effective school leadership. They also focus their learning on other areas according to their individual needs. IAL participants receive \$500, which they can use to help reach their individual goals. With the support of colleagues and mentors, as well as through the use of web based learning tools and synchronous and asynchronous communication, IAL's principals

and superintendents will develop a technological habit of mind as they enhance their skills and abilities as school leaders.

Illinois

The Illinois Technology and Leadership for Change (ITLC) program focuses on Leadership. It provides the introduction and practical application of three tools for Leaders: the ISLLC standards for professional development, the Baldrige Criteria for Excellence in Education for organizational development, and technology applications to make the first two real possibilities. The two days of on-site work are followed by ten lessons that are completed through the Web site over the course of a year. These lessons will use real tasks and local data so as not to add work, but to provide tips and tools to make necessary tasks easier to do and to complete with a higher level of quality. A follow up session of face to face sharing is then conducted to evaluate and re-focus.

Indiana

IndianaNEXT: Helping superintendents and principals understand the power of technology to support systemic change in their schools and districts and to prepare for new accountability system. Twelve hundred administrators, from public and private schools, have the opportunity to participate in a 5-day program that begins with a two-day kick-off event. The remaining days include workshops and on-line activities throughout the year. Participants' individual Goal Action Plans will guide the selection of workshops and resources.

Louisiana

LEADTech (Louisiana Educational Advancement and Development with Technology) is a multi-faceted, long-term technology leadership initiative that prepares school principals and district superintendents with an in-depth understanding of the role of instructional technology as it relates to total school improvement and increased student learning. Each participant experiences a variety of learning opportunities using different technology media. These experiences include: a two-day, face-to-face orientation; an eight-week graduate credit on-line course; a videoconference session; two hands-on technology workshops; and a day-and-a-half closing seminar. The program is designed to provide flexibility and variety. Each participant receives a laptop computer and the chance to improve his/her personal technology skills; but more than making one a better technology user, LEADTech is designed to make one a better technology leader.

North Carolina

Principals as Technology Leaders (PATL) is one program offered by the Principals' Executive Program to school administrators in the state of North Carolina. PATL will enroll 1,800 (80%) principals and superintendents over the course of the Gates Foundation Grant. PATL's

goal is to help school administrators lead their schools and districts to high quality use of technology for teaching and learning. Improved computer proficiency is a useful outcome of the instruction, but the curriculum emphasizes leadership. The NC program consists of two 2-day sessions for each class of sixty participants. The Gates's Foundation's TAGLIT (Taking a Good Look at Leadership in Technology) assessment is administered before the first session of the program. The first two-day session focuses on vision and the status of technology integration at the participant's school/system. Participants (1) learn, in accordance with the North Carolina Standard Course of Study, to employ technology to involve students in real-life projects that develop critical thinking skills, (2) analyze preliminary results from the TAGLIT about technology use in their schools, (3) use a Technology Leadership Framework to organize professional development, planning, budgeting, etc. with respect to technology, and (4) create a web page about themselves. The second two-day session focuses on instructional resources. Participants (1) learn about instructional technology organizations, websites, projects, listservs, organizations, models, books, and articles that are dedicated to helping administrators improve the use of technology for teaching and learning, (2) develop a technology action plan that addresses specific needs, and (3) create a web page about their school/system and technology action plan.

Texas

The Texas Association of School Administrators and the Texas Leadership Center provide a four-day Technology Leadership Academy in two 2-day segments at the state's 20 regional Education Service Centers. Principals and superintendents receive a laptop computer, at a discounted price, as an incentive to attend the Academy. A broad coalition of state business, government, and education leaders worked closely with TASA/TLC to develop the proposal and now serve on the Academy's executive committee. The Academy curriculum includes the leader's role in linking technology and student performance, systems change and Baldrige criteria, technology planning, curriculum integration, and professional development best practices. Six hundred seventy-five administrators participated in the 2000-2001 Academy and over 700 administrators are registered for the 2001-2002 Academy. The three-year Gates Foundation funding is matched by funding from three Texas foundations, participant tuition, corporate sponsorships, and discounts from the PC and Apple vendors. Evaluation results from the first year of implementation indicate a high level of satisfaction with the Academy curriculum and format.

For more information about the State Challenge Grants for Leadership Development program, visit the Foundation website at www.gatesfoundation.org.

Furthermore, the Southern Regional Education Board is currently investigating the question of how successful have states been in their efforts to alter leadership development programs. Some of their preliminary findings reveal that many states have made efforts to pass Interstate School Leaders Licensure Consortium (ISLLC) standards and/or to alter their program approval processes, but that these efforts alone have led to little changes within the efforts of states to produce more of higher quality individuals to work as leaders in schools. **The characteristics of those programs that seem to have been the most effective are those that have fully integrated field based experience as a required component of their programs or those that are explicit in their focus on developing leaders as instructional leaders by enhancing skills of curriculum and instructional development.**




Recruiting teacher leaders into leadership positions within schools has become a demonstrated strategy for “tapping” into those educational professionals who are interested in larger leadership positions within the school. More than just a “mentoring network,” successful programs that have a full-fledged screening process, including interviews and assessments, help to “tap” potential leaders and to support their development into larger teacher leaders.

It is important to note the importance of development a critical mass of teacher leaders as a component of trying to promote school leadership. Taking a principal and giving him or her one dose of professional development and then sending him or her back into the school to confront the same working conditions and environments that existed prior to the professional development seem lacking. However, where cadres of teacher leaders and principals are working in concert together, these efforts seem to be having larger effects.

The SREB Leadership Initiative is an effort of the Southern Regional Education Board to work “with universities and state leadership academies in the SREB region to redesign the preparation and development of educational leaders and to identify and recommend policy change in key areas of state educational leader certification.” The overall goal of this initiative is to “highlight the issue that good principals are key to successful schools and to support the SREB states as they tap, prepare, and support potential leaders who can understand school and classroom practices that contribute to student achievement, know how to work with teachers, support teachers in carrying out sound instructional practices and lead successful schools.” This project has worked to identify six areas/strategies key to developing successful principals. These six areas/strategies are: 1) tapping new leaders; 2) curriculum and instruction standards for preparation redesign; 3) practice-based preparation programs; 4) professional licensure based on improved schools and classroom practices; 5) alternative certification for principals; and 5) state leadership academies serving low-performing schools.




Using the following systematic rubric, SREB will over the next 10 years, track the progress of states as they implement new policies and procedures in these six areas of certification.

Educational Leadership Preparation and Licensure Rubric

Indicators			
Tapping New Leaders	<ul style="list-style-type: none"> No state action. 	<ul style="list-style-type: none"> Legislation or policy has been passed. Protocols and guidelines are developed. Implementation and monitoring procedures may be stated in rules but are not operational. 	<ul style="list-style-type: none"> Well established tapping and screening processes that provide diverse pools of well-qualified leaders in adequate numbers to fill vacancies.
Curriculum and Instruction Standards for Preparation Redesign	<ul style="list-style-type: none"> No state action; higher education options. 	<ul style="list-style-type: none"> State standards emphasizing curriculum, instruction and student achievement are adopted but most programs have no performance measures. 	<ul style="list-style-type: none"> All Programs have redesigned courses, and assignments and performance measures to meet standards. External validation is required beyond accreditation.
Practice-based Preparation Programs	<ul style="list-style-type: none"> No state action; completing university coursework is the basic requirement. 	<ul style="list-style-type: none"> State approved program standards require some type of school-based internship, usually unstructured and at the program culmination as a capstone experience. 	<ul style="list-style-type: none"> All programs have a well-planned, integrated, and sequential series of clinical experiences in schools.
Professional Licensure Based on Improved Schools and Classroom Practice	<ul style="list-style-type: none"> No state action, licensure based on Leadership degree and/or passing score on adopted examination; renewal based on prescribed hours of professional development; emergency certification by district request and prescribed hours of coursework. 	<ul style="list-style-type: none"> Policies passed for two-tiered licensure system; initial license based on leadership degree and/or passing score on examination; professional license based on satisfactory district evaluation and prescribed professional development. 	<ul style="list-style-type: none"> Two-tiered licensure system that provides for initial license based on on-the-job demonstration of specified competencies and professional license based on evidence of improved school and classroom practices.

Southern Region Education Board, 2002

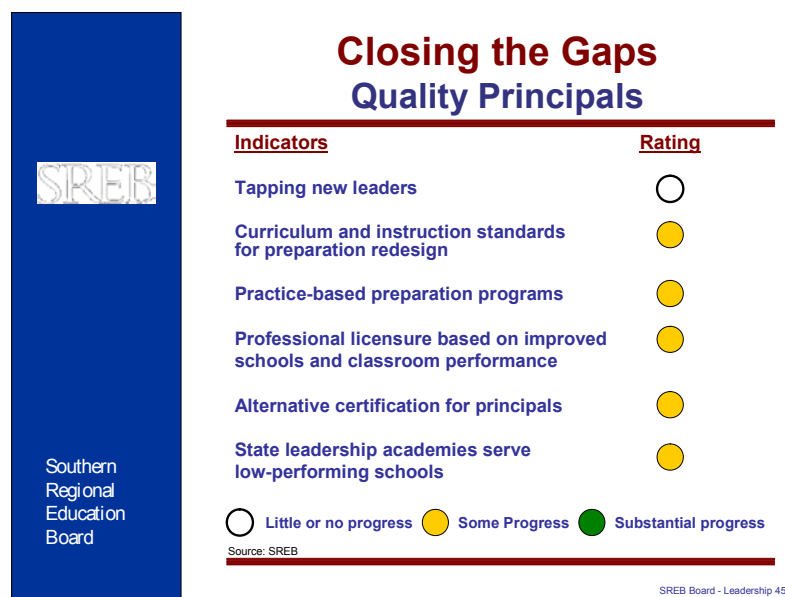
Educational Leadership Preparation and Licensure Rubric

Indicators			
Alternative Certification for Principal	<ul style="list-style-type: none"> No state action; graduate degree through a university required; university as only gate keeper. 	<ul style="list-style-type: none"> Legislation or policy provides for entry through examination or competency documentation for licensure but also requires candidates to work towards a degree in leadership or complete a specified set of certification courses. 	<ul style="list-style-type: none"> Initial licensure is open to candidates with content master's degree, demonstrated leadership skills in school or community and proven record of increasing student achievement. Candidates may choose academy or university training that is customized to their needs.
State Leadership Academies Serving Low-Performing Schools	<ul style="list-style-type: none"> No state action establishing academies with a mission to serve low-performing schools. 	<ul style="list-style-type: none"> Policies establish academies and other initiatives with a mission to serve low-performing schools, but current programs lack structure, and continue focus on the individual principals rather than school teams and provide little follow-through to support long-term comprehensive school improvement. 	<ul style="list-style-type: none"> Academies are structured to carry out the mission of serving low-performing schools, especially that group of schools just above the state identified list of lowest performing schools and focus training on school leadership teams and provide long-term follow-through that supports comprehensive school improvement.

Southern Region Education Board, 2002

A publication citing the preliminary findings of states' efforts to work on these important issues of policies will be available in the late summer of 2002 on the web at <http://www.sreb.org/main/Leadership/leadindex.asp>

Closing the Gaps: Quality Principals is a rating for the entire SREB region, illustrating how the region as a whole stands along the continuum of these six strategies. The draft copy of the document states the following: "Based on this overall score card, state benchmarks, and our study of current state policy regarding preparation and licensure of school leaders, it appears that states are in a state of transition. In order to support movement in this positive direction, the Leadership Initiative will, over the next ten years, annually update the state assessments and document progress made in the six areas, thereby helping states identify areas of success and areas on which to focus improvement efforts."



Finally, another innovative partnership aimed at improving school leadership is the State Action for Educational Leadership (SAELP) Project. This project, supported by the Dewitt Wallace-Reader's Digest Funds, is administered by a consortium of five national organizations --NASBE, the Council of Chief State School Officers, Education Commission of the States, the National Conference of State Legislatures, and the National Governors' Association. A total of \$8.9 million is designated to support a state competition for 15 education leadership grants to design plans for state legislation and administrative policies directed at attracting, preparing and sustaining effective leaders, especially at the principal and superintendent levels. A second round of implementation grants of up to \$250,000 will be awarded to formally enact legislation and approve policies. In addition to the grants, the project will provide research and technical assistance to state policymakers. The primary project goals are to:

- Promote leadership for learning as a priority in all states;
- Assist state decision makers in re-designing state policies, laws, and practices to strengthen the leadership of superintendents and principals in improving student performance;
- Help states address issues of equity in school leadership; and
- Help states attract talented leaders into high-poverty schools and districts.

9. What effective information management systems have states developed to track their teacher and school administrator work forces? Are there any states that are effective at predicting supply and demand of teachers and school administrators?

Information Management Obstacles

States often have little reliable and consistent information about the broad range of topics that might be called ‘the status of teaching.’ These include such matters as teacher turnover by school, subject area and grade level; numbers on waivers, in total and by school, subject area and grade level; numbers teaching out of field; and a full picture of teacher supply issues—including the various sources of supply for all new teachers coming into the state.

Even when all the relevant data elements may exist, they are often widely scattered and ‘owned’ by different agencies or offices within the same agency. For instance, state education agency payroll records indicate who is ‘teaching’ at any given time in the state, although those records may not be updated more than a few times per year. Even so, it is not unusual for the payroll records to contain no information about the teaching assignment, if any, of those on the payroll as teachers. Some of those paid as teachers may be administrators, may be assigned to multiple schools within a district, or may be paid from a teaching line but not teach at all. Payroll records may or may not indicate a person’s longevity in the state system; the teacher retirement system records may be needed for this information to gain an age profile of the teaching force in order to predict future supply needs. And since the payroll records do not include teaching assignment, they have to be matched with certification records and other files to determine what subject is being taught.

State licensure and certification records generally are up to date—though not always computerized—on the current license status and certification areas of a teacher. But these records do not usually contain any information about what the teacher actually teaches. Where states grant emergency, provisional or temporary licenses, this information is generally available through the state certification agency or office. More than one state grants renewals of ‘temporary’ licenses, such that persons receiving such a license stay in the system long enough to retire on a ‘temporary’ license.

Useful supply-demand studies require detailed information on both sides of the equation. Staying with demand for a moment, one challenge is the number of classes (and students) taught by teachers on waivers, taught by ‘long-term’ substitutes, or taught by out of field teachers. Unless definitions of these categories are precise, with data systems to match, getting a good handle on numbers of teachers needed to teach a given subject area on a statewide basis is very challenging. Moreover, changing licensure structures creates a disconnect between estimates of current and future need under the old and new systems. The biggest area where this will be a problem is in middle school teaching. Most states have broad grade-level license categories, such as K-8, which allow principals wide latitude in hiring and teaching assignment decisions. There is now general consensus that middle school students are badly served by such a licensure

system and by teacher assignment decisions that mirror this system. States that have changed to a licensure structure that includes middle school licensure will have a hard time matching future demand for these teachers to turnover or retirement in the current work force unless they link data systems on certification and current teaching activity. Some states—but by no means all of them—can report the actual teaching assignments by grade level and subject for every teacher.

On the supply side, as mentioned earlier, new teachers come from five principal sources: graduates (or completers) from preparation programs operated by institutions of higher education; alternative certification programs operated by institutions of higher education (many of which do not offer a degree or completion certification); non-IHE alternative certification routes; re-entry by licensed and inactive teachers; and cross-state mobility. The latter group can be broken down into new graduates who seek initial licensure in another state, and teachers licensed in one state who relocate to another state. Certification officials in the receiving state keep records about where such new teachers come from, but they often know little about their previous experience, where they obtained a degree or what they taught in another state. (The Southern Regional Education Board has done sophisticated and careful teacher supply-demand studies that are oriented in their analyses and recommendations to the needs of policy makers. The most recent are for Oklahoma and Tennessee. See www.sreb.org for more information).

All of these complexities—multiple agencies with many (and often) incompatible data bases, limited data about relevant topics in the data bases that do exist; significant rules changes that create important data discontinuities; many sources of new teacher supply that are not fully documented or embedded in state data collection systems—are key challenges highly relevant to the issue of improved mobility as a partial solution to the teacher shortage. Moreover, this discussion of data and data system issues does not touch on the broader policy questions impeding mobility—pension system issues, limited credit for experience and salary in another setting, among others.

The last point to make here is that the discussion about state data system problems takes no account of the disparities **across** states that greatly impede data sharing or even the use of comparable information.

Strategies and Recommendations

States considering the improvement of human resource data management systems should keep the following in mind:

- While most states know too little about the current status of teaching in their state, they generally know more than they think--if they would only take a careful look at the information already accessible to them. States should begin with the key policy questions: what are they trying to do and do better? Take those issues and find out from both the K-12 and higher education system what relevant information they already collect that will help the state understand what is going on. In every state in the country, data resources and the quality of policy development would be improved greatly if leaders focused first on what they already know but don't use very well.
- A new database development project should initially be construed very narrowly, limited to as few new variables, software and information systems as possible. Otherwise, the length of time (not to mention cost) to develop and implement the

system will greatly outlast the tenure of both public officials now interested in the problem and most state administrators who will be charged with using it to address problems. The design and development should be tightly focused on the key policy issues.

- States should consider the entire K-16 system in both the use of current data resources and any new system development. There will be a quicker payoff if the state inventories current data systems and concentrates on improved cross-agency data sharing and system compatibility than with a massive new project.

Data Infrastructures of States in the Southeast

The following are detailed descriptions of teacher and teaching data infrastructures in the Southeastern states. These descriptions were assembled as part of a white paper commissioned by the Southeast Center for Teaching Quality as part of its Teaching Quality Indicators Project, a regional data collection and reporting initiative.

Alabama

Alabama has modernized its personnel database system in recent years, moving information about teachers and other employees onto PC servers and off of mainframe computers. There are two primary and sophisticated databases with teacher information, although a third exists and includes evaluation data on new teachers. The first database is called LEAPS (Local Education Agency Personnel System), managed by the ADE’s Computer Services Section. LEAPS contains four linked tables, one each for information on employee demographics, funding, class assignments, and enrollments. The specific data elements for each table are contained below.

LEAPS Profile—Data Elements			
Demographics	Funding Data	Class Assignment	Enrollment
Year	Year	Year	Year
SYS	SYS	SYS	SYS
SSN	SSN	SSN	SSN
Semester	CostCenter	School	School
Assigned School	Object	Semester	Semester
Last Name	FundSource	Class	Class
First Name	Function	Subject	Grade
Middle Name	Program	Block Schedule	Enrollment
Date of Birth	FTE		
Sex	Salary		
Ethnicity	Position Tenure		
Hispanic			
Highest Degree			
Employment Date			
Contract Length			
Cert. Expir.—LEA			
Cert. Expir.—Other			
Cert. Expir.—Priv.			
SptExpThisSystem			
Employee Type			
Last Update			

LEAPS captures data on *every* individual employed by Alabama to work in the public school system, not just teachers—it simply codes certified personnel in a different manner than non-certified personnel. LEAPS data are collected annually by ADE from each of the state’s 128 school districts. These data are critical, moreover, because they are utilized to calculate state funding disbursements to school districts, Alabama’s current foundation program being contingent upon the amount of teaching a given certified staff person undertakes. Further, because LEAPS captures information on all professional staff members in each school, including data about their class assignment schedule and the students enrolled in their classes, this database theoretically could provide close snapshots of activities at the individual school level.

The second database contains much more complete certification records for each teacher, and is called the Alabama Certification of Teachers Management Information System. This database, allows ADE’s certification specialists to check and issue certifications to teachers quickly and efficiently, and for information in the database to be updated continuously.

Alabama Teacher Certification Database

- Personal data
- Mail data
- Fee data
- Certificate Data
- Substitute Teachers Cert Data
- Child Nutrition Cert Data
- ABI and FBI Fingerprint Data
- Activity Log Data
- Imaging Data
- Superintendent Priority List Data
- Certification Disciplinary Action Data
- Reference File Data

In addition, and according to a document prepared as an overview of the certification database states, all certificates and endorsements are checked against the certificate/endorsement cross-reference table to insure an invalid certificate combination is not issued. Also, requirements must be met before certain types of certificates are issued. These edits and many more have been added to ensure correct and accurate certificates are being issued. New certificates are printed at the end of each day and mailed to teachers. Further, documents pertinent to the certification process—applications, fingerprint cards, fees, supporting documents, correspondences, transcripts, substitute teachers, child nutrition, ABI and FBI clears and records—are entered into an optical image scanning system and archived. Certification specialists can access these records when they are needed.

As noted earlier, ADE is developing an additional database—actually a table within LEAPS—containing information on new teachers gathered through the PEPE teacher evaluation system. This table adds to the regular LEAPS data on individual teacher evaluation information from six successive evaluations, along with information about which teacher training institution prepared that individual for classroom duty. The PEPE data tables will be used as part of the educator accountability initiative cited earlier. In other words, teachers who receive poor

evaluations in PEPE will be identified, as will their training institutions, and remediation of those individuals will be required of these teachers by their alma mater.

Georgia

All the state education agencies in Georgia have bilateral data sharing agreements and are willing to share data. There is a P-16 student linked database. This is a data warehouse with data from the DOE, the Professional Standards Commission data, the University System of Georgia, the Department of Technical/Adult Education, Educator Workforce Research and Development, and the Educational Accountability System. There are some significant holes in this system, including the fact that arts and science completer data may not reflect an education major. There are 8 agencies responsible for data across the P-20 system, including Georgia Technology Authority, which is ultimately responsible for hardware and software decisions. The State Data and Research Center will ultimately own all of this data. The state is refining its student accountability system, and the revised system is in line with ESEA requirements.

By the latter part of the 1998 fiscal year, GDOE's Information Technology office had switched its entire personnel data process—called the CPI, for Certified/Classified Personnel Information—to a web-based application that subsumes considerably larger amounts of information on a wide range of school system employees:

Data Elements: Georgia CPI Collection

- Annual contract salary for certified employees
- Annual work days for classified personnel
- Assignment certificate type
- Assignment field code
- Assignment field status
- Assignment fund code
- Assignment job code
- Assignment percentage of time
- Assignment school code
- Assignment subject matter code
- Assignment type code
- Birth date
- Certificate level
- Certified employment basis
- Classified employment basis
- Contract days for certified employee
- Employee number
- Fiscal year
- Full name
- Gender
- Local years of service
- National certification
- Other leave
- Payroll years of experience for certified employee
- Primary assignment job code
- Race/ethnicity
- Record type
- Report period
- Sick leave
- Social security number
- Staff development leave
- State pay step
- System code
- Termination code
- Termination date
- Total annual salary for classified employees
- Vacation

A separate database contains more detailed information about Georgia's teachers, and encompasses the following fields: name; address (current and former); Social Security Number; Tests completed; areas in which teacher is certified. Tied to this certification database is an electronic imaging system, which stores representations of the paper documents that were utilized at various stages of the certification process. On a weekly basis, the certification office sends via email electronic versions of the certificates that have been approved during the previous seven days.

According to the most recent school reform law passed earlier in 2000 by the Georgia legislature, the GDOE must develop a statewide student data management system. Officials expect eventually to revise the education personnel data structure, once the student data system is put into place.

Kentucky

The state Department of Education, the Council on Postsecondary Education, and the Education Professional Standards Board are currently building an enterprise database, revising the collection systems of all three agencies, reducing redundancy and assigning owners to particular pieces of data. There are plans to have a data dictionary by 2003. There is a good technological structure in place already.

Kentucky’s teacher data are currently housed in two major mainframe-based databases, the teacher certification database files and the Professional Staff Data (PSD) system, although some minor but related databases exist with additional information as well. The teacher certification system itself currently includes approximately 140,000 records on certified Kentucky school personnel—although only about one third of these individuals hold teaching or administrative positions at the moment. The database includes normalized tables with important information on each teacher.

Social security number	<u>Internship Data Elements:</u>
Certificate(s)	Intern Social Security Number
Effective Date	Intern Social Security Number
Expiration Date	Semester
Address	Entry and completion dates
NTE scores	Intern committee members
Praxis scores	School directory information
Revocation Information	
Fee payment information	

A separate system contains electronic images of transcripts and certification papers on each teacher.

KDE’s Division of Finance administers the Professional Staff Data (PSD) system, because the PSD historically involved tracking school personnel for district and school funding purposes. Under Kentucky’s pre-KERA Minimum Foundation Program for school funding, established in the mid-1950s, state resources to support teachers were based on the number of “classroom units” required to staff schools. The PSD helped provide this information. Later, as certification rules and procedures evolved, PSD’s coursework information came to be used to help the certification office determine if teachers were teaching courses for which they were adequately prepared.

Mississippi

The Mississippi Department of Education has two primary databases with information about teachers, operated by the Management Information System of MDE. The first, known as PERSACCR, provides employment information about each teacher, and contains extensive records of which courses a given teacher is responsible for each year. MDE programmers can cull data from this mainframe database to provide numerous reports to policy officials and other Mississippians regarding teachers.

In recent years data for the PERSACCR database have been gathered annually from district offices electronically. When the file is complete, it is sent electronically to the Management of Information Systems office, entered into the mainframe PERSACCR database. However, this clumsy system is currently being updated substantially, and will be linked to Mississippi Student Information System.

MDE's Office of Educator Licensure oversees the second database, which contains information on educator certifications. The database was developed in the past on a mainframe, but in 1997 was moved to a PC server. Licensure office staff create original records for each teacher when they apply for certification, and analysts assess application information and add to those records data on each teacher candidate's Praxis scores, license class, license validity dates, and so forth. Analysts can then immediately print and mail out licenses—this "same day turnaround" service is a feature of Mississippi's system that other states have been seeking to emulate. Linked to the certification database is an optical scanning system. The hard copy documents submitted for licensure application or renewal are scanned and stored on PC servers. This allows fast access to these records by multiple Licensure office analysts, who must frequently check these records against inquiries about specific teacher certifications. Moreover, superintendents in district offices across the state may log in to the server to check the licensure status of teachers, although only analysts themselves have access to the scanned, archived documents.

North Carolina

Given the substantial resources North Carolina has invested in school improvement efforts, it is not too surprising to find that the state has a fairly sophisticated and modernized data infrastructure. In particular, information about North Carolina's 80,000-plus teachers is found in a database housed and administered by the state's Department of Public Instruction (DPI). Teaching credential information is part of the Licensure Management System, supervised by personnel in DPI's Human Resources division. The data elements include:

- License number
- Basis of Licensure
- Dating/validity of Licenses
- Renewal period
- Levels of licenses
- Work experience
- NBPTS Status
- First, Middle, Last Name
- Address
- Country
- Date of Birth/Race/Gender
- Licensure Revocation Info.
- Education—Training Institution
- Degree Attained
- Test Table (NTE, Praxis, etc., by test number, date, score.)

The licensure tables are linked, as well, to an optical imaging system which stores in digital format copies of the documents on which the licensure table is based—the certification applications, licenses, fee records, transcripts, correspondence, and the like. The imaging system archives allow licensure division specialists to view records of the certification activities of individual teachers.

Another set of tables comprise the other major portion of teacher data, and are linked to the state school finance system, which is in turn linked to the mechanism that tracks students and the classes that they take. This system is known formally as the PPAR/SAR, which stands for Professional Personnel Activity Report/Student Activity Report. The list of data elements in these tables cannot be easily captured. But the elements are designed to answer a series of questions about teachers:

- What subjects do they teach? To which children? At what grade level?
- What is the length of their course?
- What kind of school do they teach in? What district?
- What are they paid? How are they paid?

The information about the students and classes for each teacher is provided to DPI through a statewide student data management software system—the software package has been SIMS (Student Information Management System), but is moving to SIS (Student Information System). As noted, the PPAR/SAR data system is linked to teacher licensure information, and can therefore calculate the percentage of a teacher’s time he or she spends teaching a given subject to a given level of students. In essence, the system can take finance and experience data on a teacher, a school, and his or her class and duty assignments, and by crossing these data with the central state salary structure can determine each individual teacher’s salary. This is the mechanism by which state supplements for teacher salaries in poor districts are determined, for resource disbursement purposes.

Such a sophisticated and powerful database system allows DPI analysts to generate substantially more information about North Carolina’s public schools than is produced by most other states in this analysis. Indeed, the DPI website contains a veritable laundry list of data reports and analyses for viewing and downloading. For example, DPI publishes on the web an annual *Statistical Profile*, and the 2000 edition contains numerous tables with detailed information about the employees who work for the state school system, such as demographics, source of funds for positions, number of teachers in each experience category by district, percentage of teachers at different degree levels by district, state pay supplements by district for teachers, principals, and assistant principals, and so forth. DPI also publishes data on the web regarding the ABCs testing program, including racial and gender performance information on the different subject and grade assessments. Finally, these database sources provide the raw material for periodic teacher and administrator supply and demand studies. Education policy officials in North Carolina therefore have at their disposal considerably more and better information due to this data infrastructure than do their counterparts in many other southeastern states.

Moreover, North Carolina is well into a \$120 million-plus initiative to create a web-based enterprise database and portal system, known as NC WISE (Window of Information for Student Education). The NC WISE project is designed to replace the current SIMS student data management software with new WISE software, while will allow school level information on students to be “rolled up” periodically to strategically placed state data centers located around the state, and linked virtually to DPI. After roll-up, data from schools will eventually be placed in a data repository or warehouse, and selected data will be accessible to school officials and members of the “education community” through the internet via a web browser.

North Carolina is therefore well along the route toward creation of the type of data infrastructure that will be necessary to sustain a full-fledged assessment and accountability school improvement model. It also has an extant internal data infrastructure that neatly handles the administrative records needs of a modern certification and licensure system for teachers. What is less clear, however, is whether teacher data needs will be adequately addressed. It is certain that North Carolina is well equipped now, and should be better equipped in the future, to regulate its teacher workforce. While the state plans to assemble enough data about teacher training—preservice and graduate—classroom practices, professional development, career patterns, evaluations, and the like to link these things with student performance, there is currently no budget for this kind of data collection.

Tennessee

As is common in most other states, Tennessee teacher data has been scattered among several databases. For example, certification data has been stored for many years on a computer mainframe system, the Teacher Certification and Licensing Data Base. This database—originally implemented in 1984—includes “...personal, professional, certificate, and license information on those who have been certified or licensed to teach in Tennessee...Inquiry activity into the file includes departmental offices located in Nashville, departmental district offices across the state, and selected local school system offices.” (TDE Information Systems Plan, p. 32). Materials and correspondence from which data for this database are derived are currently stored on microfilm. This system produces reports that enable officials to determine if teachers are teaching classes for which they are appropriately trained, and also helps the state determine teacher salaries according to the teacher training and experience levels. Two additional and related databases also exist on this mainframe with teacher data. One contains National Teachers Exam scores, as provided to the Office of Teacher Licensure by teachers themselves, ETS, or their teacher training institution. Another is the Career Ladder Database, which contains evaluation information for those teachers who have participated in the Career Ladder program. Both of these databases more or less duplicate information found in the regular certification database, although are technically still operated by TDE.

The other major repository of teacher data is the so-called State Distribution Database, which contains information that is primarily fiscal in nature, and that is used to help determine salaries that individual teachers should be paid. This database is maintained by TDE’s School Approval Division, although the information is supplied by districts through a typical data gathering process. Namely, the School Approval Division annually sends Tennessee school districts a data file containing salary, duty, and course assignment information on each of their teachers. District employees then update this information, and return it to TDE, where it is checked and eventually uploaded to the database. This database can produce Excel spreadsheets with extracts of data on each teacher—for example teacher course assignments for a particular academic year—which can then be compared to information from the certification database. Such a process can be used to determine if teachers are appropriately qualified for the courses they are teaching. This database also generates major fiscal and personnel reports on public schools in Tennessee, compilations of which are available through the TDE website. TDE can thus produce for public consumption, for example, average teacher salaries by instructional classification at the district level, numbers of certified personnel by district, and numbers of personnel by degree level by district.

Tennessee is developing its own database portal, called the Education Information System (EIS), which will subsume the extant databases. Though data field layouts for these databases cited above were not obtained for this project, it is possible to view staff data entries in the EIS data dictionary. The next page contains these data elements.

**Selected Teacher Data Elements From Data Dictionary
Education Information System State of Tennessee**

<p>Staff Member Date of Birth First Name Gender Last Name Licensure Check Local Staff Key Middle Name Previous First Name Previous Last Name Race/Ethnic Staff Previous Social Security Number Staff Previous Teacher License Number Staff Social Security Number Staff Status Suffix Teacher License Number Waiver Request Course</p>	<p>Staff Member Class Assignment Local Class Number Local Staff Key Staff Class Begin Date Staff Class End Date Staff Social Security Number Teacher License Number</p>	<p>Staff Member Current Assignment Current Assignment Begin Date Current Assignment Local Staff Key Staff Social Security Number Teacher License Number</p>
<p>Staff Grandfather Course District ID Grandfather Course Grandfather Year Local Staff Key School ID School Year Staff Social Security Number Teacher License Number</p>	<p>Other Teacher Data Discretionary Administrative Days Discretionary In Service Days Discretionary Instructional Days Discretionary Other Days Discretionary Teacher Vacation Days End of Service Action End of Service Action Date In Service Days Instructional Days Instructional Program Number Optional In Service Days Parent Teacher Conference Days Service District ID Service School ID Stockpile Professional Dev. Days Teacher Vacation Days Teaching Method</p>	

10. Which states have made the most progress in developing a truly comprehensive human resource system for teachers, administrators and staff?

This question may be the most difficult to answer because state K-12 agencies are generally not in the human resource business. Recently, several states (notably many in the Southeast like in **Florida, Georgia, Louisiana, Mississippi, North Carolina, and South Carolina**) have developed state-level teacher recruitment centers, either independent (e.g., Georgia and South Carolina) or part of the state department of education (e.g., North Carolina). These centers serve several human resource functions, including supply and demand studies, "toll-free" numbers and web sites to match teaching positions and candidates, and provide forums for teacher leadership. Some allow candidates to research approved teacher preparation programs, learn about alternate routes to certification, track their certification status online, and find out about professional development opportunities. Some even allow candidates to create and post resumes online to distribute to local agencies looking to hire.

The best data and examples of how to create a comprehensive human resource center for teachers come from a handful of school districts across the nation. The best example may come from **New Haven, California**, a well-documented system that has systematically raised teacher standards and salaries, instituted business-like and technology-based recruitment and hiring practices, and comprehensive induction and professional development policies and practices that have stemmed the once high rate of attrition in the district (Snyder, 2001). A web site helps this district recruit from a national pool of exceptional teachers, built upon a larger technological infrastructure. Video technology is the district's new frontier. New Haven possesses the technical infrastructure to hold an interactive videoconference in which six principals, sitting at their desks, can interview an applicant sitting in a Kinko's in Kansas. The personnel department does virtually all hiring in late March (except for crises that might emerge due to death, illness, etc.) and by mid-June, they inform new hires of their school and grade level/class assignments. They use an electronic tracking process that allows human resource personnel to contact applicants immediately, rather than the usual 2-3 day turnaround time. The tracking process also allows principals to search the entire pool for candidates with desired characteristics. The personnel department also provides support in locating affordable housing (a major life issue in the Bay Area). New Haven officials credit much of their out-of-state recruiting success to Project Connect, a database that allows employers (school districts) to post vacancies electronically. Positions can be posted in a matter of moments from any personnel office. The Project Connect home page serves to disseminate this information to anywhere in the world. The project also sends posted positions directly to 385 college placement centers nationwide. These placement offices then disseminate the information from the 425 participating school districts through their own internal vehicles. In this way, a single entry from a personnel office nearly instantaneously and inexpensively reaches tens of thousands of teachers. Participation in Project Connect by both candidates and districts is completely free. New Haven's experience suggests that districts can get into the video technology for between \$6,000 (low-quality video) and \$20,000 (broadcast-quality). After high-quality applicants have been hired, there is a credential analyst in the district

who assists teachers in maneuvering the maze toward becoming fully credentialed, which lowers attrition significantly.

Examples such as these imply new and more comprehensive roles for state-level teacher recruitment centers. We would suggest that these centers would address several components.

First, the centers should organize the collection a variety of data. These data would include supply and demand data (assembled across K-12 and higher education agencies) that would provide clear information on the status of teaching in the state to policy makers, practitioners, and the public alike. Data would need to be collected on not just on teacher qualifications (e.g., percent of teachers with full license and major in the teaching field, National Board Certification, etc.) but on teaching quality and the conditions that support it, including indices of turnover, working conditions, professional development, and the like. These data could be used to judge the efficacy of new human resource policies, e.g. induction programs and use of PRAXIS III assessments, implemented in the state. Second, the centers would document successful district-level implementation of more effective and comprehensive human resource systems. These documentation stories would be used in much needed technical assistance. Finally, the centers would use data and documentation stories from their own state (as well as from others involved in a network of centers) to organize technical assistance activities that would target the needs of administrators who need new ideas and strategies for creating more comprehensive teacher development systems. These models could be instituted within the context of state-level principal and administrator leadership programs. (We suspect the program at Ohio State University could be useful in this regard.)

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Denver Public Schools website: www.denver.k12.co.us

Milken Family Foundation Teacher Advancement Program: <http://www.mff.org/tap/tap.taf>

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