Professional Development

Much is made in Pennsylvania of the subsequent education requirements that must be met in order to obtain a permanent certificate; yet in-service courses count equally with courses from approved university programs. In-service training typically occurs in a district by declaring a school in-service day which translates into the children staying home and the teachers enjoying a seminar, with coffee and doughnuts and catered lunch.[15] The twenty-four-hour credit requirement can also be earned in part via the required teaching internship; this effectively permits double counting of student teaching.

The Teacher Market

Much of the impetus for teacher quality reform has come from the observation that a large fraction of the teacher force is eligible for retirement in the next decade. As much as 60 percent of Pennsylvania's classroom teacher force could turn over by 2006. At fifty-five years of age and thirty years of service, a Pennsylvania teacher is eligible for full retirement benefits. The legislature has also kept open an early retirement window without penalty at fifty-five and 27.5 years respectively. In 1993, about 10,800 teachers and administrators, 9 percent of the professional personnel in Pennsylvania's public schools, elected to retire. (Half of the districts' business managers elected to retire.)

Large-scale retirements create an opportunity to upgrade the skills of the teacher workforce if teacher preparation institutions can be encouraged to raise their admissions and curricula standards.[16] In 1996–97, the median age of Pennsylvania classroom teachers was forty-five years. Median years of total experience (countable for state retirement plan purposes) was sixteen years.[17]

While a retirement cliff is nearing for many districts, the hiring of new teachers straight out of education school has been modest: about 1,300 newly certified teachers were hired in each of the past several years; about 5,100 total teachers are annually hired. The supply of new teaching certificates continues to exceed the aggregate demand: about 20,000 new teaching certificates are produced each year by Pennsylvania's ninety-one approved programs. Over the period 1991-97, 39,000 elementary teaching certificates were awarded, equivalent to the total number of employed elementary teachers statewide![18] Far more elementary-school teachers have been trained in Pennsylvania than are being hired—a pattern that is likely to persist into the indefinite future unless corrective action is taken.[19]

California encourages teacher market realism by statutorily obligating each teacher preparation institution to publish its graduates' employment rates. This is one of the reforms proposed by the Pennsylvania State Board of Education but resisted by many schools of education as unnecessary and administratively infeasible. They claim to have no mechanism to follow their graduates' labor market activities. Deans of edu-

cation schools contest my conclusion that most school teachers trained and certified in Pennsylvania are never able to find a teaching position by asserting that their graduates take jobs outside of the state. This may or may not be true.

How California teacher preparation institutions are able to track the employment of their graduates while Pennsylvania's institutions cannot remains a mystery. Since records were kept, Pennsylvania has certified over 516,000 public school teachers, while only 106,000 are currently employed in the classroom.[20]

Teacher Quality

When high-school seniors take SATs, they are asked to report their intended college major. The College Board then reports the results. Table 1 displays the mean verbal and math SAT scores from Fall 1996 as reported by Pennsylvania high-school seniors. It also displays the U.S. scores. Several points are evident. First, Pennsylvania's SAT scores are lower than the national scores in every field.

Second, Pennsylvania's high school seniors intending to become education majors scored substantially below their classmates interested in pursuing other academic majors. For example, the mean SAT math score of an intended education major was 471 compared to 614 for intended math majors, a difference of 30 percent. When the same education major's verbal mean SAT score of 483 is compared to the 595 of a language and literature major, we observe a 26 percent difference.

Table 1. Fall 1996 SAT Scores of High School Seniors by Intended College Major: U.S. and Pennsylvania

Intended Major	Mean SAT Verbal	Mean SAT Math	Combined Math & Verbal	Combined Math & Verbal Percentile
US Education	487	477	964	37.7%
PA Education	483	471	954	35.3%
US Mathematics	552	626	1178	85.3%
PA Mathematics	542	614	1156	81.9%
US Biological Science	546	545	1091	69.0%
PA Biological Science	540	528	1068	63.7%
US Physical Science	575	595	1170	84.1%
PA Physical Science	562	578	1140	79.1%
US Language & Literature	605	545	1150	80.9%
PA Language & Literature	595	527	1122	75.6%
US Business	482	500	982	42.2%
PA Business	479	488	967	38.5%

Source: ETS Communication to author, author's calculations.

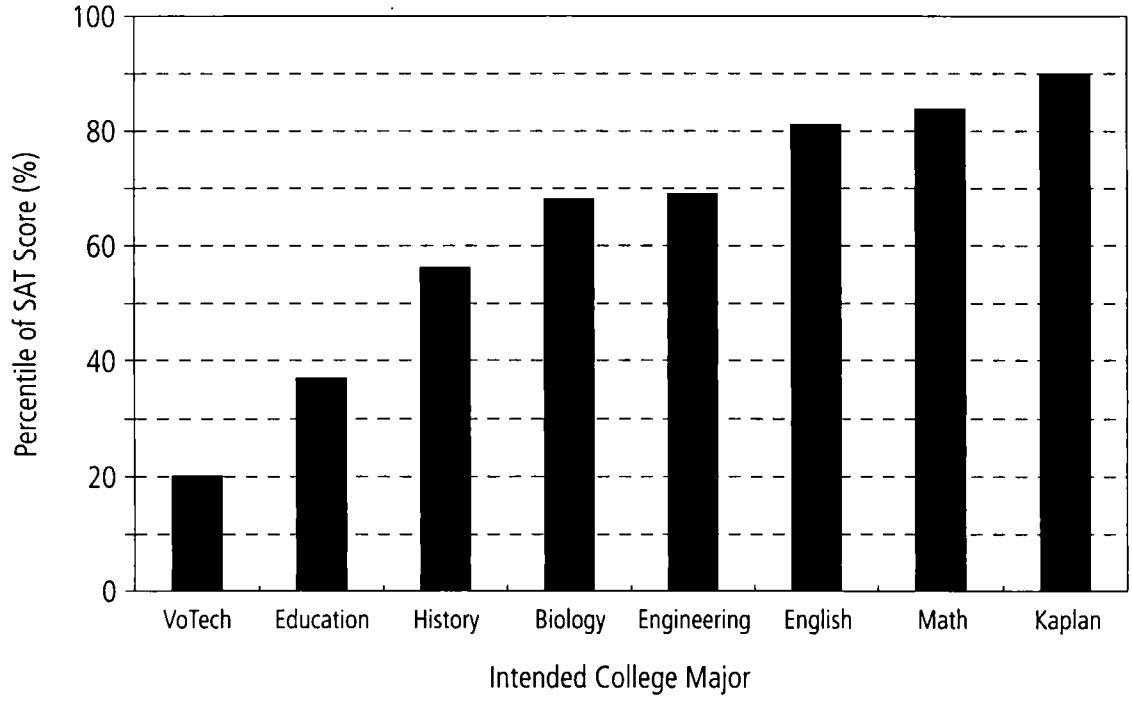
The combined math and verbal score of those interested in becoming teachers was at the 35th percentile of all those in Pennsylvania who took the SAT while those intending to be math or English majors was above the 80th percentile.

If the academic achievement level of classroom teachers hovers at the 35th percentile, that means that two-thirds of the students in the classroom have stronger scholastic achievement than did their classroom teacher a few years before.

The fact that future teachers' SAT scores are well below average should be contrasted with those required by Kaplan Education Systems, which sells a well-known SAT preparation course. Kaplan will not consider hiring anyone to teach in its SAT preparation program who scores below the 90th percentile on the math and verbal SAT tests. Princeton Review has a similar requirement. Figure 1 displays the *relative* position of combined SAT scores by intended major in 1997, and contrasts what Kaplan requires its instructors to have.

Most states independently measure the general and specific knowledge of prospective teachers as they are finishing their college degree. ETS historically sold the National Teacher Examination (NTE) to thirty-four states, but is replacing it with the Praxis examinations. Table 2 displays several general skill-and-knowledge examinations that

Figure 1. Combined National Math and Verbal SAT Scores of HS Seniors by Intended College Major, 1997



Source: ETS communication to author and author's calculations.

ETS offers for teaching candidates, and the two specialty biology tests that prospective Pennsylvania biology teachers must take, along with passing scores as of 1998 for the Commonwealth's biology teachers.[21]

Consider the Biology Knowledge 2 test. Pennsylvania's biology teachers needed a score of 135 to pass it. Since scores range from 100 to 200, a score of 135 means that students must correctly answer 35 percent of questions of average difficulty to pass the test. To put these figures in further perspective, 135 was at the 25th percentile of the national distribution of Biology Knowledge 2 scores.[22] It's not unreasonable to ask why a panel of experienced teachers in Pennsylvania believed that their state's biology teaching candidates need correctly answer only 35 percent of questions of average difficulty.

Table 2. Passing Core Battery (CB) and Biology Test Scores for Biology Teaching Candidates in Pennsylvania (1998)

Standardized Test	Passing Score	Questions to be answered correctly to pass
CB Communications	646 (out of 990)	53.5%
CB General Knowledge	644 (out of 990)	53.2%
CB Professional Knowledge	643 (out of 990)	53.1%
Biology Knowledge 1	144 (out of 200)	44.0%
Biology Knowledge 2	135 (out of 200)	35.0%

Source: Pennsylvania Department of Education, Educational Testing Service, author's calculations.

Given the vast numbers (20,000+) of teaching certificates awarded each year by Pennsylvania teacher preparation institutions, one may fairly ask what is the knowledge level of these potential classroom teachers. Given the weak program approval standards discussed above, and the protestations from some deans that their school's curricula and graduation requirements are more demanding than the state standards, it is useful to check independently to see how these prospective teachers (or the total of supply from which districts may hire) do on independent, standardized tests. Table 3 shows the range of NTE scores for nine subject areas, and identifies the college or university that had the highest and lowest median NTE scores for each. The table also translates the high and low median scores into the percentage of correct answers on questions of average difficulty. With regard to the top scores, four private colleges—Swarthmore (3), Lafayette (3), Chatham (2), and Bryn Mawr (1)—shared the honors. Translated into percent correct, their scores ranged from 63.5 percent correct in chemistry to 84.5 percent correct in English.

With regard to the lowest median NTE scores in the nine subject areas, they occurred among six institutions—Cheyney (3), Holy Family (1), King's College (1),

Lincoln (1), Ursinus (1), and Waynesburg (2). The range of percent correct went from 4.7 percent in physics to 44.6 percent in English. Remarkably, if one correlates the employment rate of each institution's graduates by subject area with the institution's median NTE score, there is no reliable relationship except for mathematics (+.24) and chemistry (-.26).[23] The latter underscores the harsh reality that, when no standards were imposed during the ten-year hiatus, districts were careless about whom they hired, so long as the person had a certificate to teach chemistry.[24]

Who Gets Hired to Teach in Pennsylvania and Why?

It is not surprising to find that teacher preparation programs vary widely in what their graduates know about the subjects they intend to teach, for the programs also vary widely in their admissions standards, curricular requirements, cost, and faculty. For

Table 3. Teacher Test Scores in Pennsylvania by College or University Median National Teacher Exam (NTE) Scores (1987-97) in 9 Specialty Areas:

Specialty Area	Number of Programs	Top Program	Passing Score	Top Program's Median NTE	% Correct of Median
Elementary	79	Lafayette	570	710	62.2%
Mathematics	79	Swarthmore	540	740	66.2%
Chemistry	64	Chatham	500	720	63.5%
Biology	77	Lafayette	580	> 800	>74.3%
Physics	50	Swarthmore	440	810	75.7%
General Science	64	Chatham	None	> 740	>66.2%
Earth and Space	32	Lafayette	570	> 800	>74.3%
English	78	Swarthmore	490	875	84.5%
Social Studies	79	Bryn Mawr	580	685	58.8%

Specialty Area	Number of Programs	Bottom Program	Passing Score	Bottom Program's Median NTE	% Correct of Median
Elementary	79	Ursinus	570	< 570	<43.2%
Mathematics	79	Cheyney	540	500	33.8%
Chemistry	64	Waynesburg	500	380	17.6%
Biology	77	Cheyney	580	355	14.2%
Physics	50	Lincoln	440	285	4.7%
General Science	64	Holy Family	None	520	36.5%
Earth and Space	32	King's College	570	<350	<13.5%
English	78	Cheyney	490	580	44.6%
Social Studies	79	Waynesburg	580	550	40.5%

Source: Author's tabulations of NTE scores in Pennsylvania.

children and parents, the key issues are: who winds up in front of the children, what do they know, and how does it affect the students' learning?

Because Pennsylvania school districts typically do not hire teachers from preparation programs located more than seventy miles away, it makes sense to examine the NTE scores of employed teachers by Metropolitan Statistical Area (MSA).[25] Table 4 shows just how variable the knowledge of employed school teachers is. In the Allentown MSA, for example, there are twenty-two school districts. If we tabulate their median mathematics NTE score, the district whose teachers had the highest score had a 760 out of 990, or correctly answered 68.9 percent of questions of average difficulty. The school with the lowest median NTE score in the same MSA had a 540 (the minimum passing score under state regulations) or correctly answered 39.2 percent of questions of average difficulty.

In biology, the district with the highest median biology NTE scored 910 out of 990 or correctly answered 89.2 percent of questions of average difficulty, while the bottom district's median NTE score was 580 or correctly answered 44.6 percent of

Table 4. Employed Classroom Teacher Content Knowledge: Highest and Lowest District Median NTE Scores by Pennsylvania Metropolitan Statistical Area

MSA	Number of Districts In MSA	MSA's High & Low NTE Score Mathematics	MSA's High & Low NTE Score Biology	MSA's High & Low NTE Score Chemistry	MSA's High & Low NTE Score Physics
Allentown	22	760-540	910-580	530-390	640-540
Altoona	7	610-560	660-620	720-690	NA
Beaver	15	720-540	750-725	590-470	700-410
Erie	13	650-580	790-610	560-490	460-380
Harrisburg	29	720-570	900-630	690-460	650-430
Johnstown	23	760-570	720-490	560-490	700-460
Lancaster	16	800-620	860-630	710-520	660-360
Philadelphia	62	850-560	825-600	770-440	820-460
Pittsburgh	80	730-510	860-480	770-415	740-380
Reading	18	730-510	780-620	640-530	NA
Scranton	33	710-560	810-390	NA	520-380
Sharon	12	790-590	750-675	600-450	NA
State College	4	800-640	840-690	NA	NA
Williamsport	8	650-550	NA	NA	NA
York	21	840-570	755-590	685-550	660-450
Non-MSA	137	800-540	910-570	910-390	645-450

Source: Author's calculations.

One can find examples of both rich districts being selective and rich districts hiring elementary teachers with low NTE scores, as well as examples of poor districts hiring elementary classroom teachers with high scores and poor districts hiring teachers with low NTE scores.

questions of average difficulty. It is difficult to imagine that students exposed to a teacher with half the content knowledge of another would be getting the same biology education.

If one carefully examines Table 4, one sees that, in chemistry and physics, districts hired teachers with little subject knowledge. Somewhere in the Lancaster MSA, a physics teacher was hired who scored 360 out of 990 on the NTE physics test. This translates into answering correctly 14.9 percent of questions of average difficulty. This occurred, as noted above, because for ten years the state failed to set passing scores in chemistry and physics, and simply certified anyone who took the exam and passed the core battery tests.

In view of the wide variations in results shown by employed teachers on standardized tests, we might ask, what is happening? Is the variation due to inadequate salary levels or large variations in district wealth? If one looks closely at the scores of elementary teachers hired, one can find examples of both rich districts being selective and rich districts hiring elementary teachers with low NTE scores, as well as examples of poor districts hiring elementary classroom teachers with high scores and poor districts hiring teachers with low NTE scores.[26]

The Legal Framework

Some insights into these haphazard hiring patterns can be gained by examining the statutes governing the teacher hiring process in Pennsylvania, and the broader issue of district governance.

Pennsylvania law is silent about how teachers are to be recruited and hired except in Pittsburgh and Philadelphia. These two districts are obligated to hire from lists that rank candidates by measurable characteristics, and must present at least three names for each vacancy to the local board. Nowhere can one find in the School Code that districts seeking to hire teachers must advertise in newspapers of general circulation. Indeed, one encounters protestations of unnecessary expense in response to such suggestions.

The decision by a superintendent to make a job offer to an applicant must first be approved by public vote of the board. State law prohibits any school board member from voting on the employment of a relative. Yet these rules are less than they seem. Let us examine in more detail the requirements to be a school board member, and the rules governing a board member's conduct. To be eligible to stand for election, a prospective member of a school board in Pennsylvania need only be a citizen of the Commonwealth, a person of good moral character, eighteen years or older, and a resident of the district for at least one year. Direct self-dealing is limited statutorily in several ways:

School employees are prohibited in Pennsylvania from serving on a board where they are employed; however, this does not preclude them serving on a board where they live if the district of residence is different from the district of employment.[27]

School board members are prohibited under the School Code from voting on the appointment of a relative to a teaching position, and the Code prohibits a school board member from being interested in, or doing business, with the school district during the term of office. These are, however, only *direct* prohibitions, and do not deal with indirect conflicts of interest that might involve, say, a spouse, relative, or friend engaging in business with the district in which the school board member serves.

The Code prohibits a school board member from receiving, directly or indirectly, monies as a consequence of voting on matters which come before the board. By not participating in a vote on a contract decision, or by delegating decision-making over financial matters to a superintendent, or to other board members, a board member is relieved from this prohibition.

Districts consider test scores no more heavily than an applicant's willingness to engage in extracurricular activities.

Prior to 1968, the oath of office administered to elected board members obligated them to affirm "...that I will not knowingly receive, either directly or indirectly, any money or other valuable thing for the performance or nonperformance of any act or duty pertaining to my office, other than compensation allowed by law." Effective November 22, 1968, however, the oath of office merely required affirmation to support, obey, and defend the State and US Constitution, and to discharge the duties of office with fidelity.[28]

The Pennsylvania Ethics Commission is responsible for enforcing these modest rules. Examination of its decisions and case law indicates that the Commission interprets the ethical obligations of elected school board members narrowly. This means one can simply abstain from voting and log roll while friends and family are hired by the district on whose board one serves.[29] Moreover, by abstaining from voting on any contract or other money issue, a determined (and not ethically challenged) school board member can benefit indirectly from the board's appropriation of monies.

Hiring Practices and Procedures

The second issue that arises when examining the test scores of employed teachers is the nature of the personnel process itself. In the Spring of 1997, a survey instrument was designed and field-tested to elicit the ways by which local school districts go about hiring classroom teachers.[30] The State Board of Education wrote each superintendent, school board president, and union president asking for their cooperation in filling out the fourteen page questionnaire. Confidentiality was guaranteed, and each stakeholder was told that the others were receiving the same questionnaire.

The following major points emerge from the resulting data:

1. About 40 percent of current teachers in the district obtained their high-school diploma or attended high school in the district where they work;
2. Only 49 percent of the districts have written hiring policies;[31]
3. About one third of districts fill full-time openings from substitutes or part-time teachers whom they already know; 14 percent of full–time positions are filled from internal transfers within the district.
4. Only 25 percent of districts advertise openings outside of Pennsylvania; about 83 percent advertise outside their district; the major forms of advertising are the *Pennsylvania School Boards Association Bulletin*, word of mouth, bulletin boards in the district, education schools' placement offices, and local newspapers;
5. Twenty-six percent of districts reported requesting waivers from the Department of Education and 65 percent (of those requesting) obtained a waiver; only 27 percent of those requesting waivers stated that a waiver was requested because applicants were not fully qualified;
6. Independent evidence on content knowledge and caliber of certifying institution was about as important in recruiting as indications of community involvement, willingness to assist in extracurricular activities, and non-teaching work experience;

These results suggest, consistent with Ballou and Podgursky, *Teacher Pay and Teacher Quality*, that most districts place little emphasis on the content knowledge of applicants other than what is reflected in their grade point averages.[32] Districts consider test scores no more heavily than an applicant's willingness to engage in extracurricular activities.

Student Outcomes

A question naturally arises as to whether the teacher employment process is associated with different levels of pupil achievement. Common sense suggests that the more careful districts are in selecting teachers, and the more attention that is paid to the academic background and achievement of teachers in the selection process, the more likely it is that districts' own students will perform better on competency and achievement tests.

Two kinds of evidence are available to investigate this relationship: simple correlations between measures of hiring practices and student achievement, and multiple regression results that hold constant the socioeconomic background of the students and the educational attainment of their parents.

What we find, broadly, is that the more professional the teacher-hiring process, the stronger is student achievement.

Statistical analysis revealed the following relations:

1. The higher the fraction of a district's teachers that attended its own high school, the lower *all* of its test scores are, and the lower is the fraction of high-school seniors with post-secondary education plans.

2. The more frequently a district requested waivers from PDE, the lower the various measures of student achievement. Correlations here range from -.12 to -.18.

3. Districts that request information beyond the mandatory state form tend to have students who achieve more highly across all grades, and also have a higher fraction of high school seniors with post-secondary education plans. Correlations here range from +.168 to .25; all are statistically significant. For instance, requesting written recommendations was significantly related to student achievement. Since candidates must obtain in writing others' opinions of their skills, this can be viewed as an indicator of how seriously the district views the application process. Evidently, districts that make this effort also have students who achieve more highly.

4. Initial screening on the basis of grades is associated with superior student achievement, as is screening on the basis of past performance in teaching and references and recommendations. Screening based on teaching experience is not associated with higher student performance. Where districts emphasize advanced degrees, test scores, and essays in their screening process, eleventh-grade student performance in math and reading is higher.

5. Where districts emphasize community involvement and willingness to do extracurricular activities in their initial screening, there is generally no relationship to student achievement.

6. Where districts screen applicants on the basis of whether or not applicants are district residents, student achievement at all grades is lower. These are some of the strongest correlations found: they range from -.20 to -.30.

Districts that use more professional personnel practices tend to be districts whose students are more likely to pursue post-secondary education and have higher math and reading achievement scores.

The above correlations conform with common sense: districts that use more professional personnel practices tend to be districts whose students are more likely to pursue post-secondary education and have higher math and reading achievement scores. Yet it is easy to imagine other factors, such as the socioeconomic status of students' families, playing important roles in explaining student achievement, and these need to be accounted for as well.

Econometric analysis that takes into account these background factors found the following: [33]

Districts that hire their own graduates, holding constant the socioeconomic status of students currently being taught, are school districts whose achievement is lower. A 1 percent increase in the percentage of teachers hired from a school's own graduates is associated with a reduction of two-thirds of one percent in the percentage of high-school seniors with post-secondary education plans.

Hiring insularity depresses various measures of student achievement. These depressing effects are five to ten times the size of the effect of coming from impoverished families.[34] Thus, districts with children from AFDC families, whose standardized reading and math scores are lower than students from nonpoor families, do no one a favor if they hire their own graduates. A 1 percent increase in such employment will depress eleventh-grade reading and math scores by one tenth of one percent, while poverty, per se, reduces reading and math scores by just one-hundreth of 1 percent.

Conventional and Unconventional Reform Strategies

Teacher certification requirements are modest in Pennsylvania. As a result, there is a large pool of certified teachers from which districts make employment decisions, and that pool is highly variable in quality. The hiring process does little to ensure that those hired are the best teachers available. What can be done to improve teacher quality? Here are some conventional and unconventional reform strategies.

Conventional Reform Strategies

1. National Commission for Teaching and America's Future

In 1996, the National Commission on Teaching and America's Future recommended improving the quality of classroom instruction by shoring up the three-legged stool of teacher quality assurance — "teacher education program acceleration, initial teacher licensing, and advanced professional development."[35] Leg one would be strengthened by requiring that programs be accredited by the National Council for Acceleration of Teacher Education (NCATE). Leg two would be strengthened by requiring that beginning teachers meet the standards being established by the Interstate Teacher Assessment and Support Consortium (INTASC), based in turn on the work of the National Board for Professional Teaching Standards. Leg three, certification, involves utilizing the National Board's framework for assessing excellence in professional practice. Mainstream reform thus involves changes in program accreditation procedures and extensive use of a national master teacher certification.

Based on what we have seen in Pennsylvania, the reader may well harbor misgivings about this approach. The call for further accreditation by NCATE, for example, rings hollow. If one correlates by district any of the student achievement measures dis-

cussed earlier against the percentage of each district's teacher force graduated from NCATE-certified institutions in Pennsylvania, one finds that the relationship is *inverse*. The percentage of students with post-secondary school plans actually falls as the fraction of teachers from NCATE-certified programs rises.[36]

Further, if one looks at the percentage of children testing below grade level, one finds that fraction growing with the fraction of a district's teacher force that graduated from NCATE-certified education programs in Pennsylvania. These empirical results are the *opposite* from what one would expect if NCATE approval were really a source of quality control for teacher preparation programs.[37]

The National Board for Professional Teaching Standards holds out the hope of using master teachers to observe and certify others so that states can begin to reward their outstanding instructors. Yet this approach has two fundamental problems: it is based on peer review and has not been validated in terms of student achievement.

The process is also expensive and time consuming. Today, the U.S. has some 3 million classroom teachers, and just a few thousand National Board-certified teachers. If one assumes that the number of National Board-certified teachers doubles each year, one finds that evaluating 3 million teachers will take at least eleven years. Moreover, most of the beneficial effects accrue in the latter part of that time period. At $2,000 per teacher, it would cost about $6 billion to evaluate the nation's classroom teachers. Meanwhile, at least one-third of them will have retired and been replaced.

Then there is the harsh reality of SAT scores. If teachers' scores continue to hover around the 35th percentile, then no amount of accreditation or subsequent professional development will succeed in convincing the other two-thirds of students about the reality of what the classroom teacher knows.

2. *Requiring College Majors for New Teachers*

A second type of mainstream teacher quality reform is to require that future teachers have true college majors in the areas in which they teach. As noted earlier, this is the reform over which Governor Ridge and the Pennsylvania Department of Education have been gridlocked with higher education for the past six months.

By requiring true majors in English, mathematics, etc., still within just four years of course work, schools of education will go through radical downsizing as their courses get traded for those taught in other departments. Not only will course credits decrease in schools of education, it is likely that enrollments will also drop sharply, since students who previously were able to avoid rigorous courses by taking education-school courses will no longer be able to get away with this. Some will simply choose not to go to college. Others will find that career opportunities resulting from the true college major are superior to those in the classroom. Finally, if minimum grade point averages, administered by departments outside schools of education, are

imposed, as suggested in Pennsylvania, it is likely that applications will drop, and graduation rates along with them.

While I am mindful that this strategy is bitterly resisted by entrenched education departments and schools of education, it would solve a good part of the teacher quality problem by subjecting teachers to academic training in the fields they are going to teach. For this to be meaningful, however, state supervision of the definition of a college major needs to be imposed and actual student transcripts need to be randomly examined. Independent validation of subject knowledge can be accomplished by raising the passing Praxis scores, and insisting that they be validated in terms of pupil achievement.

3. Elimination of Initial Certification Requirements: New York's Trial Balloon

One of the most interesting teacher quality reforms being debated was New York's trial balloon to eliminate initial certification requirements entirely, and allow anyone who has a true college major in a subject area to apply for a teaching position and be allowed to teach. Two conditions were to be fulfilled: the prospective teacher would have to take some pedagogy and child development course work in the summer preceding the first year of teaching, and subsequently take additional, specified course work over the next several years to earn the equivalent of a Master of Arts in Teaching or MAT. At the institutional level, if at least 80 percent of students in a school of education do not pass the New York subject matter tests, then the school of education risked losing its program approval. This proposal was not adopted; one can speculate that schools of education fought it because it would have dried up their supply of applications (and therefore tuition income).

The ideas suggested are unconventional for an economist, because they rely at least initially on properly aligning the civic duties, responsibilities, and authority of school board members.

Another way to think about the New York trial balloon, or strengthening "alternative certification" mechanisms as it is called in other states, is to think about what sort of skills and knowledge a school district would obtain if it simply hired randomly from the pool of college graduates. Think of this approach as throwing a dart at the normal curve of SAT scores. On average, one would wind up hiring someone close to the mean SAT score, and not on the left side of the distribution at the 35th percentile as has been the case in Pennsylvania.[38]

Still, this approach to improving teacher quality fails to deal with the local hiring decision, and one can fairly observe that it would do nothing to address likely subject matter shortfalls of current teachers.

Unconventional Reform Strategies

To make a difference today and tomorrow in terms of the quality of classroom teachers in Pennsylvania (or any state) may require new kinds of thinking. The ideas suggested below are unconventional for an economist, because they rely at least initially on properly aligning the civic duties, responsibilities, and authority of school board members.

The first step in straightening out local civic authority is to recast the oath of office that school board members must take so that they publicly agree to high standards of ethical conduct: they must agree not to benefit financially, directly or indirectly, from the activities of the school district.

Today, few states clearly prohibit conflicts of interest in business dealings of board members with the district which they govern. For example, only eight of thirty states whose state laws we have examined preclude elected school board members from having direct business dealings with the district that they were elected to govern. Sixteen even permit an elected board member to vote on the offer of a job to a relative.[39]

Optimists may argue that such explicit regulation is unnecessary and accusatory. Let me reply by suggesting in business parlance that if one leaves "money on the table" why should we be surprised when someone picks it up? Lax ethical standards allow school board members, if they choose, "to take the money off the table" without regard to the effects on the education of children.[40]

What to do with the inventory of current, typically tenured teachers while expecting stronger performance from their students?

Related to prohibiting self-dealing is the inclusion in school board and superintendent oaths of office that their purpose is to ensure that each student is to be educated to the full extent of his/her intellectual capabilities, and that it is their duty to keep the parents of schoolchildren completely informed of each student's academic progress.[41]

The rights and responsibilities of school board members and superintendents also need to be clarified. It is commonplace to hear board members complain that superintendents keep them in the dark about what is really going on, while superintendents routinely complain about board members meddling and micro-managing . Many superintendents seek to exploit asymmetric information relationships with their boards, and simply stonewall requests for information about curricula, student performance, costs, and so forth.

Another aspect of improving the ethical conduct of board members is to require meaningful financial disclosure and reasonable compensation of school board members. The purpose of financial disclosure is to create a basis for auditing the promise not to engage in self-dealing. The purpose of compensation is to ensure that people

get paid something akin to their opportunity costs. Something on the order of $7,500/year seems appropriate for the 400+ hours of time that school board members currently donate in Pennsylvania.

Dealing with the Teacher Inventory Problem: Parental Choice of Teachers

While many teachers will retire in the foreseeable future, others will remain in the classroom for a considerable period of time. What to do with the inventory of current, typically tenured teachers while expecting stronger performance from their students?

The first question is what do they know? Suggesting that tenured teachers be tested for their subject or content knowledge has so far found no takers among states pursuing education reform. Yet there are other ways to benchmark their content knowledge. One might, for example, begin with the presumption that every school district has a handful of nonproductive teachers. It seems likely, however, that while both school administrators and local union leaders know who those people are, the realities of the collective bargaining agreement and the unwillingness of school administrators to engage in conflict-ridden personnel procedures mean that these unsatisfactory teachers will remain in the classroom. Their continued presence not only adversely affects the students, but probably also demoralizes other teachers because they observe on a daily basis that nonperforming teachers get the same rewards as they do. One way to address this problem is simply to allow parents to choose who their children's teachers will be each year, rather than the current procedure of having school administrators assign students to teachers.[42]

Hiring teachers for the wrong reasons is a primary explanation of why schools fail.

At the extreme, "lemon" teachers will find themselves with few students. Since there is no prohibition in current collective-bargaining agreements against their getting paid even though they have no students to teach, and they are already budgeted for, the adverse effects on students in the classroom will be mitigated. This proposal has the additional advantage of being readily implemented by any superintendent and school board with gumption. It is not expensive. It is unlikely in all but the smallest districts that the diversion of students to other teachers will lead to much of an increase in classroom size since the number of "lemons" is small (I would guess under 5 percent of the teacher force), and the effect will be averaged across many other teachers.

As taxpayers become aware of a few teachers getting paid to not teach, pressure will grow over time on policymakers to solve this problem rather than allowing it to fester. Undoubtedly, some unproductive teachers will realize that they must improve in order to have students to teach, and will become effective enough to attract pupils.[43] Others may choose to retire.

Compare this approach to dealing with the current teacher force with such notions as spending $2,000 per teacher on the National Board for Professional Teaching Standards evaluation scheme. Empowering parents has no direct monetary costs, and is likely to have immediate, discernible, and widespread effects on teachers' own investments in themselves. It seems unlikely that near-lemon teachers would willingly permit their own classroom enrollments to drop too small as parents moved their children to other teachers who have stronger academic/subject backgrounds and pedagogical skills. The prospect of newspaper or TV coverage of nearly empty classrooms would be a wake-up call to all but the most obdurate. The near-lemon group would begin to brush up on their skills and become more concerned with classroom learning than heretofore.

Teacher Reform and the Charter/Voucher Movement

Hiring teachers for the wrong reasons is a primary explanation of why schools fail. Indeed, if one looks closely at successful school turnarounds, they virtually always include selection of a new manager (principal), and the authority to change staff, i.e., undo previous bad personnel decisions. A close look at what charters and vouchers do when they really work indicates that they circumvent historically bad teacher personnel decisions. The charter/voucher strategy creates alternative sources of education services involving different people. Because these teachers are unlikely to be unionized, and are likely to be younger than conventional staff in a conventional public-school system, they will be less expensive. Whether or not they perform better depends on precisely the same issues discussed above, i.e., whether individuals have strong academic preparation and demonstrate superior pedagogical skills.

One way to influence the quality of teaching in these institutions is to allow them to hire teachers who are not traditionally certified. Fights over whether teachers at charter or voucher institutions are certified are really fights over whether or not children empowered with choice will be consigned to teachers from the low end of the SAT distribution, or from the middle or high end of the SAT distribution.

Allowing charter or voucher schools to hire noncertified teachers is not enough, however. If choice laws do not insist that such teachers have strong general and subject knowledge (which can be determined by requiring a college academic major or inspecting their test scores), it is easy to envisage further disappointment. Choice without significant information for parents and children about the academic qualifications of teachers may not lead to any significant change. Failing to improve the substantive knowledge of teachers, while claiming to create more competition and choice in education, will simply waste more time, resources, and squander energy and initiative that could be devoted to ensuring that children learn more.

The Larger Picture

It is commonplace now to question requests by public education for more money. A nationally watched school-funding equity case in Pennsylvania recently lost, to the shock and dismay of several hundred rural and urban school districts. While large variances in per pupil spending were demonstrated by the plaintiffs, they failed to provide a factual link between different spending levels and the provision of a thorough and efficient education. Disparities between curricula and teacher quality were not addressed.

As noted at the outset, common sense tells us that improving student performance depends on improving curricula, the quality of new teachers, strengthening what employed teachers know, and the quality of hiring decisions. In this paper, I have candidly reviewed what current law, regulation, and actual practice entail with respect to teacher preparation and selection. It is not a confidence–inspiring picture.

This review may also have also left the reader wondering how any reasonable person can say with a straight face that the problem of teacher quality will solve itself. It is beyond me that, faced with the facts, one could simply say that all will be well.

Devise a set of serious teacher standards, and bite the financial bullet to buy out the inventory of substandard teachers.

The astute reader may have noticed that, while I have exhaustively dealt with the nature of teacher supply and teacher hiring, I have not addressed whether it will be possible to induce the best academically qualified to *accept* K-12 teaching jobs.

Teacher salaries where I live are fairly high. The starting salary in the Pittsburgh Public Schools for nine months with a bachelor's degree is in excess of $34,000, and in some affluent suburbs close to $40,000. Rural and industrial districts offer far less, but one would be surprised how high *relative* salaries are, even if one compares nine-month to twelve-month salaries.

One also now sees the beginning of political competition among states and districts, as elected officials recognize that the public is upset over public education and wants better results. Most of the current crop of presidential hopefuls want to appear to be committed to education reform. It is perhaps imaginable within the next few years that, as facts of the sort developed above become accepted, the sensible solution to the problem will become politically acceptable: devise a set of serious teacher standards, and bite the financial bullet to buy out the inventory of substandard teachers. My conjecture is that the first governor who figures out how much it will cost, and can make a convincing case that the higher teacher standards and buyout costs are worth it, will be a political winner. I surmise that any movement towards serious teacher standards will produce a similar result for those who initiate it.

This chapter is based on a monograph prepared for the Pennsylvania State Board of Education in conjunction with its consideration in 1997-8 of Pennsylvania's laws and regulations governing teacher preparation. The complete monograph and appendices, released July, 1998, is available on the author's web page: *http://www.heinz.cmu.edu/~rs9f/*, or from ERIC: Clearinghouse Number TM029186.

[1] Kerry A. White, "Education Takes Center Stage in Mass. Race," *Education Week*, 7 October 1998.

[2] See, for example, Anthony E. Boardman, Otto A. Davis, and Peggy R. Sanday, "A Simultaneous Equations Model of the Educational Process," *Journal of Public Economics* 7 (1977): 23-49: Ronald Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal of Legislation* 28, no.2 (Summer 1991): 465-98; Ronald Ferguson and Helen F. Ladd, "How and Why Money Matters: An Analysis of Alabama Schools" in Helen F. Ladd, ed., *Holding Schools Accountable* (Washington, DC: Brookings Institution, 1996), 265-299; David H. Monk and Jennifer A. King, "Multilevel Teacher Resource Effects on Pupil Performance in Secondary Mathematics and Science: The Case of Teacher Subject-Matter Preparation" in Ronald Ehrenberg (ed.) *Choices and Consequences: Contemporary Policy Issues in Education* (Cornell University: ILR Press, 1995); Robert P. Strauss and Elizabeth A. Sawyer,"Some New Evidence on Teacher and Student Competency," *Economics of Education Review*, 5, no.1 (1986): 41-48.

[3] Another distinction between myself and educational researchers and policy makers who emphasize pedagogy, as contrasted with subject knowledge, is my strong preference for defining and measuring effective pedagogy in terms of student learning rather than another teacher's approval of either the teacher's displayed pedagogical knowledge or displayed pedagogy in the classroom.

[4] Institutional arrangements differ in other states but the line of authority from the legislature to schools is typically strong.

[5] Willard S. Elsbee, *The American Teacher: Evolution of a Profession in a Democracy*, (New York: American Book Company, 1939), 337.

[6] The reader should be aware that Pennsylvania is in the midst of substantially revising its program approval standards. The text describes what has been in place through May 1999. Pending changes would impose either grade point admissions requirements (3.0 GPA out of 4.0 after a phase-in period), or Praxis I Pre-professional Skills Test scores of 178 in math and 174 in reading. Other pending amendments substantially raise the course requirements for a prospective teacher by obligating teacher preparation programs to require the same general and disciplinary course work as for a Bachelor of Arts or Bachelor of Science degree. Thus, a prospective biology teacher would be required, should the amendments be adopted as proposed, to take the same courses as a biology major.

[7] See Lori Bowes and Mindy Marks, "Teacher Preparation and Program Approval in Other States" in Robert P. Strauss et. al, *Teacher Preparation and Selection in Pennsylvania* (Harrisburg, Pa.: Pennsylvania State Board of Education, July1998).

[8] No suggestions are given as to what these policies are to be nor are any minimum requirements set.

[9] In April 1999, Governor Tom Ridge and Secretary of Education Eugene Hickok announced that they would be establishing a new, experimental alternative route program for Pennsylvania, but it is unclear how much of an impact this program will have.

[10] There have been recent proposals to add requirements in Pennsylvania but they have not yet been approved.

[11] As we shall see, when we convert the passing scores into the fraction of correct answers on questions of average difficulty, we find that teachers are often asked to demonstrate that they know less than half of what is on the standardized examinations in order to earn a teaching certificate. It should, however, be noted that the passing scores for Pennsylvania are scheduled to be raised in September 1999.

[12] See John H. Bishop, "Signaling, Incentives, and School Organization in France, the Netherlands, Britain, and the United States" in Eric Hanushek and Dale W. Jorgenson, eds., *Improving America's Schools: The Role of Incentives* (Washington, D.C.: National Academy Press, 1996).

[13] The skeptical reader should know that this interpretation of leeway and how it is used to solve "local" problems was verified with several Pennsylvania school superintendents and personnel directors who were happy to give me their answers in private.

[14] It is hard to understand how a state official in Lansing can know with certainty that failure to grant a request for an emergency certificate will work to the educational detriment of a student in Kalamazoo. However, Pennsylvania school officials have observed privately to me that the Michigan waiver test would cut down on the quantity of nonsense they have to deal with.

[15] Most states require 180 days of attendance of five hours of teacher contact. Over time, in-service days have been negotiated by individual districts to count towards this contact requirement.

[16] Some observe that those women now retiring are among the brightest and best trained of Pennsylvania teachers because they entered the teaching profession when this was one of the few professions open to educated women. As a result of affirmative action statutes, regulations and court cases, educated women today find many more avenues open to them. The absence of occupational segregation explains to some why there has been a long-term decline in the quality of public school teachers despite the significant progress made in raising their absolute and relative salaries.

[17] Robert P. Strauss, et. al *Teacher Preparation and Selection in Pennsylvania*, Table 5.7.

[18] Ibid, Table 5.15.

[19] The state could simply stop subsidizing elementary education majors, for instance.

[20] The key question from a public vantage point is why taxpayer subsidy should accompany the production of so many teachers who do not get jobs. The continued overproduction of elementary-school teachers is a case in

point. Like most states, Pennsylvania's student body will be increasingly concentrated in the secondary grades, yet elementary education continues to be the focal point of most teacher preparation programs.

[21] Note that Pennsylvania does not require prospective teachers to pass a Core Battery Test in math, although most other states do.

[22] Strauss, et. al, *Teacher Preparation and Selection in Pennsylvania Schools*.

[23] A positive correlation indicates that actual hiring tends to be greater from approved programs with higher NTE mathematics scores, and a negative correlation indicates that actual hiring tends to be greater from approved programs with *lower* median scores. The employment rate was measured by taking—by NTE subject area and certifying institution—the ratio of certificate aspirants with a known NTE score ever employed in a Pennsylvania school district or intermediate unit to the total number of certificate aspirants with known NTE score. See Strauss, et. al, *Teacher Preparation and Selection in Pennsylvania*, Tables 7.8-7.11 and 7.12.

[24] To be sure, one can also argue that the economic opportunities for chemists are greater outside teaching, so that districts were unable to find chemistry teachers except from programs which had very weak results. On the other hand, these data also show the effects of artificially limiting supply by insisting that would-be chemistry teachers be immersed in teaching methods courses, the core activities of many education schools, to the exclusion of taking actual chemistry courses. In any event, the data show that programs with weak chemistry teachers got more of them hired in Pennsylvania school districts than those with strong chemistry teachers.

[25] Robert P. Strauss, *Who Should Teach in Pennsylvania's Public Schools?* (Carnegie-Mellon University, Center for Public Financial Management, 1993): Table 5.2.

[26] See Strauss, et. al, *Teacher Preparation and Selection in Pennsylvania*, Table 7.14. This may explain why researchers have such difficulty demonstrating that higher spending is associated with greater student achievement: undisciplined hiring practices lead to highly variable student achievement results. I encourage the reader to look carefully at Table 6 and wonder along with me why advocates for school finance equity have not focused on these types of results rather than just on per-pupil spending.

[27] Only Philadelphia and Pittsburgh may impose residency requirements for teachers and school administrators; all other districts are prohibited from doing so.

[28] This stark weakening in the oath of office occurred at a time when Pennsylvania was consolidating its 2,500 school districts into 501, and eliminated oversight by County School Superintendents. The reader may find as undue my emphasis on the "civics" aspects of school governance. However, in the absence of strong ethical requirements against self-dealing it is difficult to envision why volunteer school board members, who typically devote in excess of 400 hours per year to these enterprises, would not get tempted to appropriate privileges to compensate them for their efforts, let alone not take advantage of the huge opportunities to take what resources are on the table without violation of law.

[29] Alternatively, districts may actively "trade" jobs with each other.

[30] Several superintendents and a member of the Pennsylvania State Board of Education helped devise the questions in the questionnaire, some of which sought to elicit procedures, practices, and emphases in the hiring process which are consistent with nepotism models of teacher hiring.

[31] This result compares favorably with William W. Cooley and Carol A. George, *Educational Indicators for Pennsylvania*, University of Pittsburgh, Learning Research Development Center, *Pennsylvania Educational Policy Studies* Policy Paper No. 14, 1995.

[32] Dale Ballou and Michael Podgursky, *Teacher Pay and Teacher Quality*. (Kalamazoo: W. E. Upjohn Institute for Employment Research, 1997).

[33] See Table 13 in Robert P. Strauss, Lori L. Bowes, Mindy S. Marks, and Mark R. Plesko, "Improving Teacher Preparation and Selection: Lessons from the Pennsylvania Experience, *Economics of Education Review*, forthcoming.

[34] Ibid.

[35] National Commission on Teaching and America's Future, *What Matters Most: Teaching for America's Future* (Washington, D.C., Author, 1996), 29.

[36] To be more precise, the Pearson correlation coefficient between the fraction of high-school seniors in 1990 with post-secondary school plans and the fraction of teachers from NCATE-certified education programs in Pennsylvania was -.36 and the odds of this being due to chance were 0.0001.

[37] The NCATE-approved programs in Pennsylvania are basically the former normal schools which do not attract the best undergraduates. For many districts, the NCATE programs produce the most teachers and certificates, so it is easy for a district to find someone with a teaching certificate. In some parts of the state, they are the only producers of teachers. So, if a district does not advertise and look around aggressively, it will wind up taking what is nearby.

[38] On this point, see Hanushek and Pace, "Understanding Entry into the Teaching Profession" in Ronald Ehrenberg, ed., *Choices and Consequences: Contemporary Policy Issues in Education*.

[39] See Ruth Kolb and Robert P. Strauss, "A Survey of State Laws Governing School Board Ethics," paper presented at the American Education Finance Association Annual Research Conference, Seattle, Washington, 19 March 1999. [Heinz Working Paper 99-8]

[40] Lack of state fiduciary oversight also enables those who initially handle local monies or contracts to add to their well-being. It is said in the publishing business that 5 percent is the usual "thank you" for having selected a particular textbook.

[41] Remarkably, if one reads the Pennsylvania School Code, one finds very little reference to parents of school children, let alone their being stakeholders in the successful education of their children.

[42] For incentives to work properly, the children must face independent high-stakes testing so they do not simply choose the easiest graders or most popular teachers. Given rising academic standards in most states, this seems increasingly likely.

[43] After presenting this idea at the October 28, 1997 New York Board of Regents Symposium on Incentives to Achieve Higher Standards in Albany, New York, and a few public exchanges with the President of the New York Federation of Teachers, I was informed by one of the regional education managers (a BOCES superintendent) in upstate New York that the practice of formerly allowing parents to choose the teachers has worked well in Northern Minnesota along predicted lines. This is not that novel an idea, and in a sense merely ratifies what many aggressive parents insist on when they individually complain to local principals. To the market oriented who are not persuaded, the obvious question is why allowing choice among buildings (charter or voucher) is sensible, but choice *within* the building is not.

Raising the Bar for Pennsylvania's Teachers

Eugene W. Hickok and Michael B. Poliakoff

Pennsylvania's teacher preparation system has long been focused on seat-time in education courses. Governor Tom Ridge's "Teachers for the 21st Century" initiative would revolutionize this system by reshaping traditional teacher education programs and by expanding alternative certification opportunities. This initiative raises the bar for prospective teachers in the Commonwealth: they must now meet higher admissions standards for preparation programs, take more academic courses and fewer education courses, and pass licensure exams with higher scores. College graduates who are academically distinguished and pass the appropriate licensure examinations may teach under the mentorship of a principal or master teacher without attending a school of education. The initiative also requires professional development focused on subject-related coursework. In these ways, Pennsylvania is taking a big step toward ensuring that all of its children have excellent teachers.

Pennsylvania's ninety-one teacher education programs produce nearly 12,000 new teachers every year. Every one of the Commonwealth's nineteen publicly supported universities has a teacher education program. The state has now also made a strong commitment to its new alternative certification program, which is designed to bring individuals with high academic qualifications to the public schools without requiring them to seek formal training in education, a program that may, at first glance, seem dismissive of teacher preparation programs. Yet Pennsylvania continues to see a role for colleges of education in the preparation of new teachers, if they can ensure that their programs produce candidates who are academically qualified to teach their subjects. For this reason, Governor Tom Ridge's *Teachers for the 21st Century* program includes both alternative certification and the reform of traditional teacher education programs.

Pennsylvania's *Teachers for the 21st Century* initiative focuses on clear, measurable, and rigorous guidelines and standards for men and women preparing to be teachers. When fully implemented, it will ensure that certification signifies the high academic proficiency that is essential for successful teaching. It will also establish continuous

education requirements for teachers that will help them maintain their proficiency in the academic areas they teach.

Pennsylvania's Teachers for the 21st Century initiative focuses on clear, measurable, and rigorous guidelines and standards for men and women preparing to be teachers.

There was, and remains, much to fix. What we had was a teacher preparation and licensure system that was focused on seat-time and inputs, a system that had many course requirements but could give only limited assurance of competence and quality. There were seven areas of urgent concern.

1. Few teacher education programs had meaningful admissions standards. Most programs set their admission requirement—if they had one at all—at a 2.5 grade point average. In other words, the doors were open for C+ (or worse) students to become teachers. In addition, that C+ could represent any courses - including the most notoriously lax classes in our higher education system.

2. Grading standards in teacher education programs were extremely low. At one public university, 78 percent of students who took "Curriculum and Foundations" courses received "A" grades. But on that same campus, only 18 percent of the students who took English courses or Physics courses received "A's." Indeed, throughout our State System of Higher Education, which produces over half the new teachers in the Commonwealth, we found:

   - The average grade in an education course is 3.3.
   - The average grade in a humanities course is 2.83.
   - The average grade in a mathematics course is 2.30.
   - The average grade in a natural science course is 2.49.

   A National Center for Education Statistics study confirmed that grade inflation has been far more pronounced in education courses than in other areas of higher education. The data revealed that in the United States the average grade in an education course was 3.41, compared to 2.96 in social sciences and 2.67 in science and engineering courses. We found, moreover, that many teacher preparation programs were increasing the credit-hour requirements in education courses at the expense of strong preparation in academic content areas.

3. Students preparing to be high-school teachers were not required to take the same academic content area courses that their peers who majored in those areas had to complete. Academic capstone experiences and senior projects were often casualties of this weakened education major. While math majors, for example, had to complete differential equations and advanced calculus, at some campuses students preparing to teach high school mathematics—including Advanced Placement courses—could substitute a "history of mathematics" course for these rigorous and challenging experiences in the academic discipline itself.

4. Many teacher certification programs had no meaningful standards by which to measure knowledge and skills in the academic content areas their candidates intended to teach.

5. Qualifying scores on the National Teachers or Praxis exams were set at absurdly low levels. Although the questions are carefully designed to be at a level of difficulty appropriate for a minimally qualified, entry level teacher, Pennsylvania, like most other states, allowed candidates for certification to score in the bottom 10 percent on many of these tests and still receive licensure. Thus, candidates with significant knowledge gaps were finding their way into tenured teaching positions in the public school system.

6. There was no vehicle for alternative certification. A highly successful teacher at a private school, community college, or university could not legally teach in a public school without taking a large battery of education courses.

7. There was no requirement for the professional development of veteran teachers.

In short, Pennsylvania's system allowed students with a C+ (or lower) GPA to enter colleges of education and also certified them as teachers with the equivalent of an "F" on their licensure exam. An A+ graduate in mathematics from Carnegie-Mellon could not teach in the public schools without certification, but a graduate of a teacher education program who scored in the bottom 20 percent on the Praxis math exam for secondary teachers would be fully licensed.

Many teacher certification programs had no meaningful standards by which to measure knowledge and skills in the academic content areas their candidates intended to teach.

A few years ago the Holmes Group, a consortium of eminent American educators, articulated a vision they called Tomorrow's Schools of Education. They stated:

> Competence in subject matter requires that education students experience first-rate learning in the liberal arts....Prospective educators taking a content course in English or chemistry or mathematics should sit alongside liberal arts majors even at advanced stages. Education credentials should not be printed with shoddy ink. Tomorrow's Schools of Education will therefore refuse to admit or recommend for a teaching license any student whose studies in the arts and sciences have been diluted in any way whatsoever.

We expect that the *Teachers for the 21st Century* initiative which Governor Tom Ridge introduced in December 1997, which the State Board of Education approved unanimously in March 1998, and which is now in the final stage prior to adoption, will bring the dream of Tomorrow's Schools of Education closer to reality. Pennsylvania's reforms emphasize that the teacher must model academic excellence: only a teacher who has walked the walk of academic

achievement can successfully lead students to achieve. In order to receive state approval, a college of education will have to abide by standards in three critical areas.

ADMISSIONS: Beginning in 1999-2000, Pennsylvania will require that candidates for teacher training programs complete at least three semesters of college level, liberal arts courses and attain a B grade point average in order to be admitted to a teacher training program. Recognizing that there will always be students of high promise who develop late, our standards allow the institution to enroll up to 10 percent of the candidates who do not meet this GPA, if exceptional circumstances justify admission. Moreover, candidates who do not attain the required GPA have the option to work hard for another semester or more to meet the academic challenge of this requirement. Just as pre-medical students often take an extra semester or year of science courses to meet the rigorous admission requirements of medical school, those aspiring to a profession as crucial as teaching should strive for and attain high standards of academic excellence.

The new standards require prospective high-school teachers to fulfill the same course requirements as their classmates seeking a B.A. or B.S. major in a particular academic discipline.

This 3.0 requirement is to be based on college course work *exclusive of education courses*. As we examined the problem of grade inflation, we determined that colleges and universities would be more likely to maintain rigorous standards for their education students, as long as the entrance requirements are grounded in the arts and sciences that are the core of all further study.

CURRICULAR REQUIREMENTS: The new standards require prospective high-school teachers to fulfill the same course requirements as their classmates seeking a B.A. or B.S. major in a particular academic discipline. This has always been a best practice in preparing teachers, since it requires them to develop a serious scholarly commitment and expertise in the subjects they will teach. A science teacher, for example, who has personally conducted research and experiments and who has personally experienced the process of scientific inquiry will be able to guide students to creative and innovative work in science and technology. No amount of training in teaching methodology can substitute for real intellectual maturation in an academic area. Finally, the prospective teacher must maintain a minimum 3.0 GPA in the subject area he or she intends to teach. A teacher with weak academic skills cannot help students meet the demands of the next century.

TEACHING EXPERIENCE: The new standards require that education students have field experiences in teaching at the very beginning of their training. Thus they will discover at the outset whether they have the commitment and temperament necessary for effective teaching and can begin to integrate academic experiences with their application to the classrooms they will one day lead.

We have, finally, required that colleges of education ensure that their curriculum in pedagogy is efficient and avoids duplication. A full teacher preparation program, with a complete major in an academic content area, must be designed—like any other college degree—to be completed in four years. A proliferation of course requirements in educational methodology may be good for the job security of professors, but it is an unethical misuse of taxpayers' funds and student tuition.

In addition, the *Teachers for the 21st Century* initiative includes more rigorous licensure testing, professional development, and alternative certification:

RAISING QUALIFYING SCORES: We have already begun to raise the minimum qualifying scores on the National Teachers or Praxis exams from the bottom quintile or decile to scores that approach the national average. All prospective teachers must pass these exams in order to be licensed to teach in public schools. We will raise the bar gradually, giving prospective teachers time to prepare for these higher standards, but we will move it steadily upwards. Before 1997, candidates could pass the Professional Knowledge Test with a score in the 5th percentile; now the passing score (167) represents the 27th percentile. On the Elementary Education exam, we moved to the highest qualifying score in the nation (168), but we will not stop there. On the Biology Exam (Part I), we moved our cut score up 12 points (156). We are still not where we wish to be, but no longer will candidates who miss half or more of the questions be granted licensure.

ALTERNATIVE CERTIFICATION: One size does not fit all in the preparation of teachers. We have promulgated guidelines by which those who have completed their undergraduate or graduate education with academic distinction and have passed the same licensure examinations (including the subject specialty exam) that other prospective teachers take, are allowed to find employment in a one-year teaching apprenticeship program at an eligible public school. These alternative certification candidates receive the same salary as other beginning teachers and teach independently with the guidance of a participating principal or master teacher as a mentor. Other states have found that this type of program enhances their teaching force by allowing uniquely qualified individuals to contribute to their public-school systems; some studies even show that teachers who gained alternative certification were more skilled than their traditionally licensed counterparts. Although detractors claim that such programs are doors through which unqualified persons enter the profession, research shows that they are windows of opportunity for those with special expertise and commitment to improve the school system. Students at expensive private schools have always had the benefit of subject area specialists who are passionately devoted to their subjects with or without traditional state certification; the alternative certification process will make it possible for such individuals to move efficiently into the public-school system and give all students the

We will not reach the goal of placing a qualified teacher in every classroom by pretending that quality does not matter.

benefit of their expertise. Response to the program from school superintendents and potential candidates has been extremely strong: we anticipate a steady stream of excellent new teachers from this program.

PROFESSIONAL DEVELOPMENT: Working with the General Assembly, we are seeking a requirement of a minimum of 9 semester hours or the equivalent of subject-related course work for all teachers every five years. This will be a statutory requirement for licensure, and each school district will be responsible for creating a broad-based committee of educators, parents, and business leaders to oversee the development of meaningful professional development plans. We have developed our own examples of professional development programs that focus on academic content. Now in their second year, the Governor's Institutes for Educators and the Governor's Academies for Urban Educators offer week-long, intensive course work that upgrades teachers' knowledge of what they teach. In administering our Federal Eisenhower Grants for Mathematics and Science Educators, we also require that the programs administer a pre- and post- test to demonstrate the value added to the participating teachers' mathematics and science skills.

Pennsylvania thus rejects the National Education Association's objective of making licensure "a process controlled by the profession." It is clear that the profession was doing little to ensure that new teachers had the knowledge base they needed and quite a lot to ensure that colleges of education expanded their prerogatives over the preparation of public-school teachers. The voices of employers, parents, and others who see the end result of education—student learning—are a crucial corrective to the voice of teaching unions and associations.

Critics may object that states which—unlike Pennsylvania—have teacher shortages would experience a staffing crisis were they to apply such standards. We reject this argument. We will not reach the goal of placing a qualified teacher in every classroom by pretending that quality does not matter. Rather than recruiting the mediocre by lowering standards, states need to make teaching in the public schools a prestigious career open to only the best qualified. We anticipate, moreover, significant reinforcement of the teaching force through alternative certification and look forward with great optimism to the contribution that professionals with special subject area expertise will bring to our classrooms.

Pennsylvania's new standards require objective criteria for admission, curriculum, and academic achievement. Our colleges of education will need to work hard to meet these new standards, and we have advised our deans of education that accreditation is no guarantee that state approval will be forthcoming. But we are firmly convinced that the dynamic new teachers who will emerge from these programs will justify this effort, and we will see the result of excellent teaching in higher levels of student achievement. For that, after all, is the reason schools exist.

Traditional and Alternative Certification: A View from the Trenches

Naomi Schaefer

The stated purpose of state teacher certification and state approval of teacher education programs is to ensure that every public school child is taught by a qualified instructor. A close look at what these programs entail, however, suggests that they do not reliably accomplish this goal. Case studies of what it takes to become a teacher in California, Ohio, New York, and Minnesota reveal that approved preparation programs tend to have very low entry requirements, no exit requirements, scant subject content, and a surfeit of pedagogical courses of uncertain value. While the requirements are flimsy, they are also numerous. Hence the time and money required to complete such programs probably discourages outstanding candidates from entering teaching. Alternative certification programs have promise, but today they are spotty—some states have none—and uneven in their requirements. States should consider creating more alternate routes to certification and should ensure that these programs do not pose so many obstacles as to undermine their usefulness.

Introduction

It has often been noted that two million of the nation's teachers will be eligible for retirement in the next five to ten years. That means a very large number of new teachers must be hired. While this problem could easily become a crisis, it can also be seen as a tremendous opportunity to take a second look at the way public-school teachers are trained and certified.

State systems of teacher certification were put into place to ensure that every teacher would be qualified to teach, but a close look at the way these systems work in practice reveals that they do little to accomplish this goal. In most states, people receive a license to teach only upon successful completion of a teacher-training program, normally housed at a school of education, which has been approved by the state and accredited by national organizations of educators. This report suggests that teaching candidates generally enter training programs which have very low entry require-

ments, no exit requirements, scant subject matter content, and many pedagogical courses of dubious value. While the requirements themselves are flimsy, the time and money needed to complete the requirements likely discourage many outstanding candidates from pursuing teaching as a career.

Today there are two competing sets of ideas about how teachers should be prepared and hired. One model—which predominates today—holds that states need to ensure that prospective teachers graduate from high-quality preparation programs. Professional educators set the criteria for what makes a training program adequate and school districts can hire only from among graduates of these programs. This model has been criticized by researchers who argue that effective teachers—teachers who boost student achievement—are more likely to be people who score well on standard measures of verbal ability (SATs, for instance) and who have solid knowledge of the subject they teach, not those who have received a lot of training in schools of education. Members of this camp argue that states must make it easier for talented college graduates to enter teaching without having to spend years in traditional training programs.

Teaching candidates generally enter training programs which have very low entry requirements, no exit requirements, scant subject matter content, and many pedagogical courses of dubious value.

This paper takes a close look at the preparation of a traditional teaching candidate (several candidates, actually) and compares this candidate with one who pursues an alternate route to the classroom. The comparison focuses on two questions: (1) how good is the preparation of the traditional candidate? and (2) how great an obstacle does the alternate route present to a candidate who some would already consider ready to teach? Certification programs in four states are described in detail. First, traditional certification programs for high-school teachers in California and Ohio are examined. Next, alternative certification options for high-school teachers in those two states as well as New York are described. Finally, teacher certification options for elementary education in Minnesota are reviewed. These case studies are followed by a chart showing the traditional and alternative paths to certification in these states and two others.

Certification for High School Teachers: How It Works in California

Becoming a public school teacher in California normally means entering a traditional teacher education program after completing a bachelor's degree. Unlike some states, California has not had many programs in recent times that allow students to gain certification while earning a B.A. (the results of a conscious decision to scrap the undergraduate education major). Today, California State University at Sacramento (CSUS) has one of the largest teacher education programs in the state. Let's examine its admissions prerequisites, education curriculum, and student-teaching requirements for a candidate seeking to get certified as a high-school biology teacher.

One education department chairman described the test as follows: "Can you read, write, add, and subtract? Good. You'll pass."

Admission to the program requires three things: graduation from college with a specified GPA; a passing score on a test of basic reading, writing, and math skills; and either a major or minor in biology or a passing score on a biology test.

An applicant first must submit transcripts that demonstrate a GPA of at least 2.75, a modest standard in an age of collegiate grade inflation. The application also includes a statement of moral character as well as a list of experiences related to teaching and a statement of professional goals. CSUS also requires a group interview lasting one hour.

All candidates for the program must take a basic skills test—the California Basic Educational Skills Test (CBEST), which has reading, writing, and math sections. The test is said to be pegged to an eleventh grade level. One education department chairman described the test as follows: "Can you read, write, add, and subtract? Good. You'll pass." Several sample questions are included below to give a sense of the test's difficulty. Statistics on the passing rates of this test are unavailable because the state is currently in litigation over it.

The CBEST reading section is supposed to "assess your ability to comprehend information presented in written passages, tables and graphs." This section is divided between critical analysis and evaluation, and comprehension and research skills. It tests such things as whether the candidate can distinguish between fact and opinion, make logical inferences based on a passage, recognize the intended audience of a given passage, etc. The writing section consists of two essay topics designed to give you the opportunity to demonstrate your ability to write effectively. The math section is divided into three parts: estimation, measurement, and statistical principles; computation and problem solving; and numerical and graphic relationships.

Samples from the California Basic Educational Skills exam:

Example:

_____most people know that film must be developed into negatives before making photographs, few are familiar with the process. In black-and-white photography, film is removed from the canister in a darkroom and placed in a special light-resistant developing tank. When the film is safely in the tank, it is safe to turn on the lights and begin the developing process. Many of the same basic procedures are used to develop color film. The first step is to add a chemical "developer" that brings out the images on the film's photosensitive surface. The developer is later poured out and replaced with a liquid "stop bath"—an acetic acid solution that prevents any further reaction between the film and the developer. After the stop bath is poured off, a fixing bath is added, at which point the film can be exposed to light without being damaged. The fixing bath is then poured off, the developing tank opened, and the film washed

to remove any chemical residue. _____, the negatives are dried in a dust-free location.

Which words or phrases, if inserted in order into the blanks in the passage would help the reader understand the sequence of the writer's ideas?

A. Even if; However
B. Since; Consequently
C. Although; Finally
D. Because; Meanwhile
E. While; As a result

According to information presented in the passage, what should one do immediately after placing film in the developing tank?

A. Add a chemical developer
B. Check the images on the film's surface
C. Turn off the lights
D. Place the tank in a dust-free location
E. Add a liquid stop bath

Sample math question:

Tara can develop 2 rolls of film in about 18 minutes. At this rate, how long will it take her to develop 8 rolls of film?

A. 42 minutes
B. 1 hour 12 minutes
C. 1 hour 20 minutes
D. 1 hour 44 minutes
E. 2 hours 24 minutes

Sample essay question:

Ernest Hemingway once commented, "As you get older, it is harder to have heroes, but it is sort of necessary." To what extent do you agree or disagree with this observation? Support your opinion with specific examples.

What these admissions standards appear to do is to ensure that a completely ignorant person cannot enter a teacher education program, but they do not ensure that all teacher candidates are well-educated.

High-school teaching candidates in California should have an undergraduate degree (major or minor) in the subject they want to teach—biology in this case. But they can bypass this requirement by taking the Praxis Series test for biology, which includes the Single Subject Assessment Test (SSAT) for Biology,

the General Science SSAT, the Praxis II Biology Content essays, and the General Science Content Essays.

The SSAT Biology and Life Sciences exam contains a multiple choice section and two essay sections. A passing score for the Biology and General Science multiple choice section is 680 on a scale of 250-990. For the Biology Content Essays, a passing score is 157 on a scale from 100 to 200. For the General Science Content Essays, a passing score is 150 on a scale from 100 to 200.

The topics covered by these tests include basic principles of science; molecular and cellular biology; diversity of life, plants, and animals; classical genetics and evolution; ecology; and science, technology, and society.

Here are some sample questions from the Praxis series exams for biology and general science:

The highest blood pressure in the human circulatory system is found in which of the following?

A. Arteries

B. Arterioles

C. Veins

D. Venules

The diversity of finches in the Galapagos Islands is an example of which of the following?

A. Adaptive radiation

B. Seasonal isolation

C. Mechanical isolation

D. Selective hybrid elimination

Here is an example of a sample essay question:

Darwin proposed that the mechanism of evolution was natural selection acting on heritable variation within a population. Darwin, however, could not account for these sources of variation. How do the principles of genetics account for this variation?

Requiring that teaching candidates demonstrate basic academic skills is not unreasonable, but the usefulness of a simple test with a low cutoff score can be questioned. This test does not inspire much confidence in the system's ability to ensure that all teachers are knowledgeable. Allowing a minor in biology to count as sufficient subject-level preparation would also seem to be a low standard. What these admissions standards appear to do is to ensure that a completely ignorant person cannot enter a

teacher education program, but they do not ensure that all teacher candidates are well-educated.

Curriculum

CSUS offers the option of a two- or three-semester program. Most students choose the two-semester program, which requires a full-time commitment. In the first semester, a student seeking to become a high-school biology teacher is required to take the following classes, as described in the CSUS course catalog:

- Multicultural Education for a Pluralistic Society: An examination of the nature of the sociopolitical relationship between California's public schools and the state's major cultural groups. Cultural dimensions, including language, history, gender, education and achievement are considered.
- Education Psychology: Emphases are given primarily to cognitive, developmental and social-psychological theories and data which contribute to the systematic investigation and application of effective teaching, learning, assessment, environmental management and motivational skills needed by teachers and learners. Individual differences and needs are stressed. A variety of classroom teaching strategies are used as models. Media and classroom dialogue are the basic instructional tools.
- Secondary School Teaching Methods: Orientation to student teaching; teaching strategies, legal guidelines and planning procedures (including unit and lesson plan development), curricular organization and activity programs; classroom management; micro-teaching and self-evaluation
- Teaching Methods for Science: Techniques of presentation and methods of evaluation of secondary school science; should be articulated with student teaching. Activities include discussions, presentations and demonstrations.

The strength of the teacher licensing program in California would seem to be the way students are gradually introduced into the classroom.

During the second phase of the program (the second semester of the two-semester program), students take only two more classes. One is a seminar on "classroom concerns," in which the role of the student teacher in the secondary school is the primary focus. Particular attention is paid to the discussion of problems and issues facing credential candidates during their final steps in preparing for teaching.

The other class is "Teaching Reading in the Secondary School," which stresses "teaching reading in the junior and senior high schools; techniques for the improvement of word recognition skills, vocabulary, study skills and comprehension in subject matter areas; informal means of classroom organization for reading improvement. Discussion

and participation in such classroom activities as panel discussions, presentations and demonstrations."

What is remarkable about these six required courses is that only one of them has anything to do with science. It is not clear why understanding California's major cultural groups and being able to teach high-school students to read would be considered crucial for a biology teacher.

Classroom Teaching

At CSUS, student teaching begins simultaneously with the start of classes. In the first month, students observe classroom teaching in several situations and grade levels. During the remainder of the semester, they participate as student teachers, serving as classroom assistants in at least one classroom. There are also visits to community agencies that serve the school population.

During the second phase of the program, participants do more intensive student teaching: five days a week for four hours a day. Most beginning teachers claim they are completely overwhelmed in their first year of teaching and starting with a half day may be helpful. The state of California is also working to help overwhelmed first-year teachers by giving them a mentor for their first two years on the job.

Once these two phases of the program are complete, the candidate must receive a recommendation from CSUS. No set standards dictate whether this recommendation is given. As in the case of college admissions, different factors are weighed: GPA, classroom performance, etc. My impression, though no administrator would say this, is that few people who complete the program fail to be recommended for certification.

The strength of the teacher licensing program in California would seem to be the way students are gradually introduced into the classroom. The weakness is in how little else the program does to ensure that they are qualified to teach. There are no exit requirements that would serve a quality control function. Once a student has met the minimal requirements for entry into a program, all he or she must do is pass some classes (of doubtful worth and difficulty). Given the reality of grade inflation, it is hard to imagine that many candidates fail to graduate. Note, too, that no aspect of the program strengthens the candidate's subject matter knowledge.

Certification of High-School Teachers in Ohio

The basic requirements for teacher certification do not vary greatly across states, so the steps for becoming a teacher in Ohio are similar to those in California. After completing the bachelors degree, the candidate must go on to get a masters in education. This requirement is new for Ohio; before 1999, applicants could become certified while earning their bachelors degree.

Admission requirements in Ohio involve the same three elements as in California: demonstrating basic reading, writing and math skills, having a B.A. with a certain GPA, and demonstrating subject matter knowledge. To gain admission to the teacher education program at Ohio State University's School of Education, a candidate must have majored in the subject that he or she wishes to teach. There are no exceptions and no test-based alternative.

To enter the OSU program in biology, a candidate must have thirty-nine semester hours of science, including twenty-three in the biological sciences. These should include the following subjects: Energy Transfer and Development; Form, Function, and Diversity; Ecology; Evolution; Animal Diversity; General Plant Biology; General Genetics; Basic Microbiology; Intro to Bio-Chemistry; and an upper level course in taxonomy or systematics (classification of organisms). Students must also take or have taken the following courses (which can be completed while they are working on the masters degree): Physical Geology; Historical Geology; General Chemistry (two courses); Organic Chemistry; Mechanics and Heat; and Electricity, Magnetism, and Light. Ohio seems to be making a serious effort to ensure that its teachers know their subjects, though it is unclear whether a good test of their knowledge might serve the same purpose.

OSU requires a GPA of 3.0 in all undergraduate classes, which is slightly higher than other education schools studied in this report. (Typically, the GPA requirements range from 2.5 to 2.8.)

Students can demonstrate competence in reading comprehension in one of three ways: passing Advanced Placement English test (taken at the end of high school), obtaining a Pre-Professional Skills Test reading score of 171 and writing score of 169 (on a scale from 150 to 190), OR getting a grade of B in an English Composition class. To demonstrate competence in mathematics, a passing AP score is acceptable, as is a 171 on the PPST in mathematics, OR a B in 3 credits of a math course.

Accepting AP scores as proof of a candidates' mathematics, reading, and writing ability is basically an admission that in order to teach high school, one need only be a smart high-school graduate. Nor is specifying a B in any college math or English composition class a particularly high standard, given the very basic (and generously graded) classes in these subjects available at most colleges.

The Pre-Professional Skills Test, administered by the Educational Testing Service, is divided into three parts: reading, writing, and mathematics. The reading section is designed to measure literal, critical, and inferential comprehension. Questions include finding the main idea of a passage, determining the underlying assumption, and drawing conclusions. The reading and writing sections each require one hour. The writing section is divided between forty-five multiple choice questions and an essay question. It is designed to test whether the candidate can use grammar and language to com-

municate effectively. For the most part, the multiple-choice section involves correcting sentences.

Here are sample questions from the Pre-Professional Skills Test:

> Alice Fletcher, the Margaret Mead of her day, assisted several American Indian nations that were threatened with removal from their land to the Indian Territory. She helped them in petitioning Congress for legal titles to their farms. When no response came from Washington, she went there herself to present their case.
>
> According to the statement above, Alice Fletcher attempted to
>
> A. imitate the studies of Margaret Mead
> B. obtain property rights for American Indians
> C. protect the integrity of the Indian Territory
> D. become a member of the United States Congress
> E. persuade Washington to expand the Indian Territory
>
> If the italicized phrase is correct, choose A, otherwise choose the correct replacement.
>
> Martin Luther King, Jr. *spoke out passionately* for the poor of all races.
>
> A. spoke out passionately
> B. spoke out passionate
> C. did spoke out passionately
> D. has spoke out passionately
> E. has spoken out passionate
>
> Here is a sample essay question:
>
> Which of your possessions would be the most difficult for you to give up or lose? Discuss why.

The sample essay answers given, even those with the highest scores, are not candidates for Pulitzers. They seem like competent essays by high-school students.

The math section consists of forty multiple choice questions designed to measure the mathematical skills and concepts that "an educated adult might need." They cover such topics as order of whole numbers, estimation, problem-solving, pattern recognition, and geometric properties. The following examples are typical:

> Which of the following is equal to a quarter of a million?

A. 40,000
B. 250,000
C. 2,500,000
D. 1/4,000,000
E. 4/1,000,000

If P divided by 5 equals Q, then P divided by 10 equals

A. 10Q
B. 2Q
C. Q / 2
D. Q / 10
E. Q / 20

The curriculum at Ohio State focuses on pedagogical theory, but with some emphasis on the specific field the candidate will be teaching.

OSU Curriculum

The curriculum at Ohio State focuses on pedagogical theory, but with some emphasis on the specific field the candidate will be teaching. Course work is said to include "specialty content, integrated content, integrated pedagogy, psychology of learning and teaching, specialty methods, research methods, and a variety of clinical and internship experiences."

Students seeking high-school biology certification are required to take Logic and Psychology in School Mathematics/Science, which is described as "[a] study of the nature of psychological growth and the development of logical ability in children and the implications for teaching science." Also included in the curriculum is Fundamental Ideas of School Science, which focuses on "exploring innovations in science education and the development of knowledge and skills for facilitating integrated, experience-based approaches to science instruction." Courses like Fundamental Ideals of School Technology (which studies societal forces and problems attributed to technology and culminates in the development of a "technology education philosophy") are also an integral part of the curriculum. All in all, there are seven courses like these. It is hard to believe that so many courses on the pedagogy of science teaching could be necessary.

OSU also expects three quarters of student teaching. This begins with observation and then moves on to participation and responsible teaching in a public school. Individual and group conferences and seminars are offered simultaneously in order to give candidates feedback on classroom problems or questions.

Five quarters of full-time study are necessary to complete the OSU program. At the end, a master's project and examination focused on current issues in mathematics, science and technology education are required.

Comparison

The requirements for entry into the teacher education programs in California and Ohio are similar, though California seems more lax in its undergraduate content requirements. CSUS candidates do not have to demonstrate much beyond a basic understanding of the concepts of biology. The Praxis examinations, I am assured by biology majors, could be passed by a student who took AP biology in high school. OSU does not use tests to exempt students from the course work requirements of a biology major. And there are stringent requirements in Ohio for what undergraduate biology and general science course work must include.

Ohio's traditional certification requires a longer time commitment than California's, but it is not clear how many advantages are gained from the extra months.

While Ohio does not have its own basic skills test, the Educational Testing Service's PPST, which is used by a number of different states, is not much different in content or difficulty from the California Basic Educational Skills Test. The skills required for passing are modest, as indicated by the fact that a sufficiently high AP score will exempt a candidate from taking it. Again, the assumption seems to be that, if a candidate has the reading, writing, and math skills of good high-school student, he or she is ready to teach high school.

Ohio's traditional certification requires a longer time commitment than California's, but it is not clear how many advantages are gained from the extra months. Ohio's program places a greater focus on the pedagogical theories of teaching than the practical applications of it. OSU education students devote a lot of time to figuring out how high-school students might hypothetically learn math and science, but much of this is done before candidates have any real experience in the classroom. California's program seems to do a better job of integrating the practical and theoretical aspects of the instruction.

On the other hand, CSUS's class on multicultural education and teaching in a diverse environment also addresses a subject that might be difficult to learn on a theoretical level. While teachers, especially those going into California's inner cities, may find it useful to have a history of race relations in the schools, this is unlikely to do much to prepare them for the environment they will actually encounter there.

OSU's program also seems to fall victim to the prevailing fascination with technology in education. While there is no reason to object to technology in the classroom, most basic biology experiments can be done without a computer. Growing bacteria can still be done using petri dishes instead of Windows 98.

Both OSU and CSUS require at least a one-year time commitment. They also charge similar amounts of money. CSUS asks $11,400 (including room and board) and OSU charges $13, 904. (Both of these are in-state rates, since most candidates for teacher certification live and plan to teach in the state where they become certified.) This is a considerable sum of money for a recent college graduate to pay.

What is most striking about certification in both states is how little effort there is to exercise real quality control at the conclusion of the programs. Neither state requires any tests after the programs are complete, and neither program requires a certain GPA in order for its students to become certified. There is no guarantee that graduates have mastered any particular material.

An Alternative Route to Certification

Twenty-four states allow prospective teachers to bypass traditional teacher education programs, though how much of a shortcut these alternative certification programs offer varies greatly among these states. For candidates interested in teaching in California, there are bona fide alternatives to the standard, costly, protracted, and not necessarily effective teacher preparation path. These are geared toward both recent college graduates and mid-career professionals looking to switch into teaching.

What is most striking about certification in both states is how little effort there is to exercise real quality control at the conclusion of the programs.

The fastest way to get into a classroom in California is to complete a program called the "district internship" program, overseen by the California Commission on Teacher Credentialing. It has been around since the 1960s, though it is not well known. Now, however, California has major teacher shortages, in part because of its across-the-board class-size reduction initiative. That, combined with the low percentage of teachers staying past their first year, has led the state to remove some of the hoops candidates had to jump through in order to get certified. In 1996-97, 1,322 teaching candidates were enrolled in the district internship program (compared with 19,200 who completed the standard teacher preparation program that year).

In the district internship program, candidates apply for a paid two-year internship, which includes an initial six-week intensive preparation program. Throughout the two years, they must continue training on weekends and during the summer. In order to get one of these internships, candidates must first find a school district that will accept them. Generally, inner city schools will jump at the chance. Suburban schools, where the teacher shortage is not so severe, often don't want the hassle of training an inexperienced teacher.

To be admitted, candidates must have either a major or minor in biology as well as two math courses (not lower than beginning calculus), one physics class, two chemistry classes, four biology classes, and five electives—at least fourteen in all. District interns may not bypass the biology major with the Praxis exams, but must take the Praxis exams in addition to prove their competence in the biology and general science. Candidates for the district internship must, like those in the traditional program, also take the CBEST exam.

Programs like the district internship will be more likely to draw bright college graduates who seek a relatively fast way into the classroom.

The six-week preparation program consists of 120 clock hours of training in child development and teaching methods (in the subjects and grade levels to which they will be assigned). Because the prospective teachers will soon enter a classroom, they are not overloaded with too much psychology or education theory. The curriculum for the district internship centers on questions and problems that arise in the classroom.

The district intern certificate is valid for two years, during which time candidates must receive additional instruction and training—the amount to be determined by the school district—and must receive an annual evaluation of their performance. Because the internship has only recently become more common, it is difficult to get information on the specifics of individual district programs. During the first two years, though, all interns are required by law to have a mentor available to answer their questions on everything from lesson plans to classroom discipline. After the internship, the employer can recommend interns for a professional "clear" credential. After that, there is no additional course work to complete, and the candidate can teach in any district in the state.

Unlike the more traditional programs, candidates are paid a first-year teacher's salary. This, obviously, lightens the financial burden associated with entry into teaching.

Programs like the district internship will be more likely to draw bright college graduates who seek a relatively fast way into the classroom. Especially "hard-science" majors who—perhaps even less interested than their social science and humanities counterparts in the pedagogical theories that education schools are likely to teach—may be more attracted to programs like the district internship. Given that a good part of the teacher shortage in America is in science, this is not a point to overlook. Given that the alternative certification program requires more science preparation than the traditional certification program (and that neither provides any additional training in the subject area), products of alternative certification programs will probably know much more about their subjects.

No Alternative Route in Ohio

Unfortunately for people interested in teaching in Ohio, there is no equivalent of the district internship there. In fact, Ohio has no real alternative preparation programs at all. *Alternative Teacher Certification: A State-by-State Analysis*, by Emily Feistritzer and David Chester, lists one Ohio program; it has been around since 1990, but only one person has actually been certified using it. (Currently no districts are approved for the program.) Moreover, recent education reforms in Ohio have added obstacles to becoming a teacher. Prospective teachers who could once be certified while earning their bachelor's degree must now take an additional five quar-

ters of courses, earn a master's degree, and pay an additional year of tuition (not to mention the income they forego by not working) before they can be certified.

A Weak Alternative

Not all alternative certification programs offer teaching candidates a serious alternative. At first glance, New York seems to offer an easier route to teacher certification than Ohio because it has an alternative certification program (at least in New York City). But this is deceptive.

What alternative certification means in New York is really just deferral of the regular requirements, which are some of the most elaborate in the land.

The process in New York begins like the one in California: a candidate must be nominated by a school district, complete a few requirements, and then be granted a Preparatory Provisional Certificate (PPC) enabling him or her to go directly into a classroom.

Before earning the PPC, however, the candidate must have thirty-six semester hours in the intended subject of instruction as well as eighteen hours in teacher education. According to the New York Department of Education's website (www.nysed.gov/tcert), these should "enable the teacher to create a productive learning environment, plan and execute instructional activities, and monitor and assess student learning in the middle level grades through grade 12. Teachers must be prepared to address the special developmental needs of adolescents through young adults. The concentration must prepare the teacher to work effectively with students from minority cultures, students of both sexes, students from homes where English is not spoken, students with handicapping conditions, and gifted and talented students." Candidates should also have completed a year of college level study (or the equivalent) of a language other than English. Finally, they must take a two-hour seminar in detecting child abuse.

These requirements could be completed fairly easily during college. Unfortunately, passing them does not make a candidate a fully certified New York City Public School teacher. In order to begin the alternative certification program, he or she must first develop an education plan with the Office of Recruitment, Personnel Assessment and Licensing (ORPAL) showing that all the traditional New York State certification requirements will be completed within a period of four years. What alternative certification means in New York, therefore, is really just deferral of the regular requirements, which are some of the most elaborate in the land. These requirements include supervised student teaching, passing several tests, and acquiring a master's degree.

Candidates for traditional certification must have a supervised student-teaching experience in both the middle and high school grades. If the candidate pursues the alternative route, then the classroom experience accumulated in the alternative program

counts as a year of experience so long as a recommendation is received from his or her supervisor.

Candidates for a provisional certificate must then pass a slew of tests. These are known as the New York State Teacher Certification Examinations (NYSTCE) and are given by different testing organizations at different times to test different skills. The first one is the Liberal Arts and Sciences Test. Its purpose is to assess knowledge and skills in scientific and mathematical processes; historical and social scientific awareness; artistic expression and the humanities; communication skills; and written analysis and expression.

Some examples from the Liberal Arts and Sciences Test:

> Last year in Proctorsville, it rained or snowed on 164 days. There was sunshine in Proctorsville on x days. What is the value of x?
>
> Which of the following questions must be answered before it is possible to solve this problem?
>
> I. Were there more days of rain, more days of snow or more days of sunshine?
>
> II How many days did the sun shine in Proctorsville when it also rained or snowed?
>
> III How many days did the sun shine in Proctorsville when it did not rain or snow?
>
> IV What is the ratio of days with sunshine in Proctorsville to rainy days?
>
> A. I only
>
> B. I and II
>
> C. II and III
>
> D. IV only

There is also a written assignment which provides two passages requiring analysis. They give a good sample response. (There is also a warning on the bottom of this page. It says: "The sample response on the following page is for illustrative purposes only. Copying this essay or significantly or substantially paraphrasing it will not be accepted." One wonders how many people started writing down the sample response from the registration bulletin when they got to the test.)

The second test is called the Assessment of Teaching Skills (ATS), which is designed to gauge the learner's knowledge of the learner (by which seems to be meant understanding of child development, etc.); instructional planning and assessment; instructional delivery; and professional environment.

One example from the Assessment of Teaching Skills will suffice:

> Which of the following methods of assessment would be most effective in providing the teacher with information about whether students have internalized and can apply concepts developed in a lesson about adverbs?
>
> A. having each student independently generate a definition of the concept, in his or her own words, the day after the lesson
> B. asking students to create their own examples and nonexamples of the concept
> C. providing students with examples of the concept and asking them to use the examples correctly in the original sentence
> D. having students select examples and nonexamples of the concept from a page of paired sentences.

Unlike the other standardized tests that appraise literacy or content knowledge, the tests that stress professional skills are difficult. Not because they are intellectually challenging, but because it seems that there might be more than one answer and unless a test taker has the correct understanding of pedagogical theory, he or she might get it wrong. The answer is B, but it is not clear why. If I were a fourth grader trying to show that I understood the lesson about adverbs and a teacher told me to give examples, I would start arbitrarily picking words that ended in -ly, and the teacher wouldn't know that I didn't understand that adverbs have something to do with verb modification.

For candidates interested in teaching at the elementary school level, alternative certification is generally not an option anywhere.

The ATS also includes an essay on how to solve problems like poor peer interaction in the classroom.

Finally, in order to demonstrate competence in the subject the candidate intends to teach, he or she must take a Content Specialty Test, consisting of 100 multiple choice questions. A candidate in Middle School Social Studies, for instance, must demonstrate knowledge in history; geography and culture; economics; government and political science; and social studies skills.

After one year of teaching and passing all of the tests, a candidate will still have earned only a provisional certificate, valid for five years, during which time he or she must meet all of the requirements for the permanent certificate, as provided for in one's ORPAL plan.

In order to get a permanent certificate, the candidate must get a masters degree in a field that is educationally related to the license field (e.g., science education). Candidates must also complete six credits in special education and two credits in human relations. Finally, the second part of the ATS test, a video exam that records

a teacher's performance for later evaluation, must be taken. Only after all these requirements are complete will the state of New York issue a permanent teaching certificate.

New York City's alternative program allows candidates to put off certain requirements, but candidates are by no means exempted from them. On the whole, New York's teacher certification requirements are some of the longest and most involved regardless of the route the candidate chooses. The state has no true alternative certification program.

Teacher Certification for Elementary Education

For candidates interested in teaching at the elementary school level, alternative certification is generally not an option anywhere. This is true for three main reasons: (1) knowledge of pedagogy is considered to be even more important at the elementary level than it is at the secondary level; (2) specialized academic expertise seems to matter less because a wide range of subjects is taught, all at a lower level; (3) teacher shortages are not widespread at the elementary level so there is less incentive for a state to allow candidates to bypass traditional requirements.

Minnesota has no elementary-school teacher shortage at all and thus no alternative certification programs, with one exception: the Collaborative Urban Educator, a joint venture by the Minneapolis and St. Paul Public Schools and the University of St. Thomas. This program is only open to applicants of color, however—a fact that is not clearly disclosed in official communications. Specialists at the Minnesota Department of Education Personnel Licensing Division say that there may be other alternative certification programs, but they have never heard of any.

All of the traditional teacher certification programs in Minnesota are virtually identical because state law spells out their specific requirements more than most other state laws do. The details are then added by the Minnesota Department of Families and Children. Some of the state regulations seem sensible. For example, Minnesota has an undergraduate course distribution requirement for admission to a teacher education program. Students must take one-third of their college classes in the humanities, social sciences, natural sciences, and mathematics. (It is hard to imagine what the other two thirds might consist of.) There are no requirements regarding the candidate's major field. It could be biochemistry or physical education.

The University of Minnesota offers a teacher education program that is typical for Minnesota and satisfies all state requirements. Its admission requirements are similar to those in other states. Applicants must demonstrate a minimum GPA of 2.80 and pass the Pre-Professional Skills Test. The candidate must earn PPST scores of at least 173 in reading, 172 in writing, and 169 in math. (See sample questions in Ohio section). The university also requires some computer knowledge and experience with diverse populations of children.

The elementary education program at the University of Minnesota includes twenty-four weeks of classes (two semesters) and ten weeks of student teaching that builds on principles and methods used in courses. The required courses can be divided almost evenly into two groups. The first contains courses that cover how to teach particular subjects. The content is fairly straightforward and devoted mostly to curricular decisions and lesson plans. These courses include

- Theory and Practice of Teaching Art in Elementary Schools: art concepts, skills, and processes appropriate for elementary level children.
- Survey of Children's Literature: techniques and materials
- Teaching Reading in the Elementary School: reading programs from the perspective of historical change, language research, and demographics
- Teaching Language Arts in the Elementary School: improvement of instruction and study of trends
- Introduction to Music Education
- Teaching Science in Elementary Schools: materials, resources, and methods
- Teaching Health in Elementary Schools: materials, resources, and methods
- Teaching Social Studies in the Elementary Schools: content and organization of programs, improving learning situation, and effective use of materials
- Teaching Math in Elementary Schools: objectives, content, philosophy, instructional materials, methods of instruction, and evaluation

The route for becoming a teacher in Minnesota is one-size-fits-all, and prescriptive state requirements ensure that there is no variety among the preparation programs.

The second group of classes is more pedagogically focused. It includes Technology for Teaching and Learning, which explains how technology can be used to create and access educational materials, communicate with other users, and sort electronic databases. A course called Building a Learning Community covers major theories and research on schooling as it relates to human interactions, small groups, face-to face relations, and individual personality and social development. There are also a number of courses connected to child development. A course on Biological and Physical Foundations of Education is described as an overview of biological and physical development from birth through adulthood and the relationship of this development to education. There is also a course on the Learning and Cognitive Foundations of Education.

Some of these pedagogy courses seem more practical than others. For example, the introduction to elementary-school teaching includes information on curriculum, organization, instruction, and professional decision making. Principles of development

involves learning about classroom management and instructional delivery, and related topics and their application to teaching and curriculum.

While it may be true that elementary-school teachers should know more about the "learning process" than their high-school counterparts, this curriculum seems a little excessive. Full courses on "building a learning community" and "teaching with technology" seem extravagant. More time spent in student teaching would likely prove more useful. Also, most candidates for teacher certification have probably given some thought to the role of a school and might not need an entire course devoted to "school and society." This course includes readings in social science and philosophy concerning the role of school in changing American society.

The most serious problem with teacher certification in Minnesota is that there is no way around these requirements. It doesn't matter whether the candidate decides he wants to be a teacher when he is sixteen or forty or whether he has any relevant experience or not. The route for becoming a teacher in Minnesota is one-size-fits-all, and prescriptive state requirements ensure that there is no variety among the preparation programs.

Overview of Six States

The chart that follows shows requirements for certification in six states. It contrasts the traditional route to certification, which exists in every state, and the simpler route offered by some alternative certification programs, for instance, the district internship program in California.

These states were selected for several reasons. California and Texas are large and have alternative programs. Minnesota, a state which is not facing significant teacher shortages, was included because it got the highest marks on the "report card" issued by the National Commission on Teaching and America's Future, which rewards states for lengthening teacher-training programs and requiring that they be aligned with the recommendations of professional organizations.

Every year, bright students from the nation's top colleges decide to teach but don't head toward public schools.

The chart also includes different academic subjects and levels of teaching. While choice of subject does not much affect the load of requirements, the level of teaching matters significantly. There are practically no alternative certification programs in the country for elementary-school teachers.

The categories are straightforward. "Admissions requirements" covers what applicants need before they can enter the program. Depending on the program, the candidate can apply during college or after. "Course requirements" involves what must be taken after the candidate enters the program. "Tests" includes those that must be taken to enter the program as well as any taken during and after the program.

Some states, like Minnesota and Virginia, have no alternative certification programs. The traditional path listed on the chart is the only one possible in these states.

The case studies presented in this report indicate that the system generally serves to constrict the pool of teaching candidates in ways that are unreasonable and even detrimental to the original goal. Those who wish to teach encounter a series of obstacles of uncertain value. Those weeded out are not necessarily incompetent, and those who make it through are not necessarily competent. While states like California are moving toward a system in which it is easier for qualified candidates to become certified, states such as Ohio are making it more difficult.

Every year, bright students from the nation's top colleges decide to teach but don't head toward public schools. Instead, they accept lower salaries and larger workloads at private and charter schools, at least in part to avoid the obstacle course of public-school teacher certification. Recruiting these talented teaching candidates to the public schools will require us to rethink state requirements for teacher licensing.

Table 1

State	California	California
Traditional or Alternative	traditional	alternative
School	California State University Sacramento	district internship
Level examined	high school	high school
Subject examined	biology	biology
Basic requirements	B.A. with major or minor in biology (or take Praxis Series bio exams), 2.75 GPA, statement of professional goals and experiences related to teaching, group interview, completion of post-baccalaureate program at CSUS	B.A. with minor or major in biology, nomination from school district, completion of six-week training program (120 hours)
Course requirements within the program	Two semester program: one class on each of the following: multi-cultural education, educational psychology, secondary school teaching methods, teaching methods for science, classroom concerns, teaching reading	Six-week intensive preparation program on classroom management, curriculum development, etc.
Student teaching requirements	Begins with start of classes. One month of observation, three months as classroom assistant, one semester of five-days-a-week, four-hours-a-day teaching	Two years of teaching experience
Test requirements (entry and exit)	California Basic Educational Skills Test	California Basic Educational Skills Test
Duration	Two semesters full-time after undergraduate degree	Six weeks (plus two years of paid teaching)

Table 1. Continued

State	Ohio	Virginia
Traditional or Alternative	traditional	traditional
School	Ohio State University	Old Dominion University
Level examined	high school	elementary
Subject examined	biology	multiple
Basic requirements	B.A. with major in biology, GPA of 3.0, completion of masters degree at OSU	B.A. with major in interdisciplinary studies, GPA of 2.5, personal interview, writing proficiency
Course requirements within the program	Seven courses on pedagogical methods like Fundamental Ideas of School Science and Logic and Psychology in School Science	120 total credits with approximately forty-two in two areas of concentration, fifth year program with thirty credits in pedagogical methods like The Special Needs Child in the General Education Classroom and Fundamentals of Human Growth and Development
Student teaching requirements	Three quarters of student teaching beginning with observation and then practice	One semester of student teaching, five days a week
Test requirements (entry and exit)	Pre-Professional Skills Test reading score of 171, writing 169, mathematics 17	Pre-Professional Skills Test
Duration	Five quarters after undergraduate degree	One year after undergraduate degree

Table 1. Continued

State	Minnesota	New York
Traditional or Alternative	traditional	traditional
School	University of Minnesota	SUNY Cortland
Level examined	elementary	middle school
Subject examined	multiple	social studies
Basic requirements	B.A. with certain distribution requirements across humanities, social sciences, natural sciences, and mathematics, GPA of 2.80, computer knowledge, experience with diverse populations of students, completion of masters in education at U of M	B.A. with major in history, including a number of other distribution requirements, with 2.5 overall GPA and 3.0 in history, letters of recommendation. Completion of a masters degree is required for a permanent certificate
Course requirements within the program	Two semesters of classes, with approximately half in resources methods and materials for particular subjects and half in pedagogical methods	Master's degree includes fifteen hours of classes in social science as well as six hours of courses in professional education which can include courses on curriculum as well as urban education, two hour seminar on detecting child abuse and some other electives for a total of thirty hours of classes
Student teaching requirements	Ten weeks of student teaching	Usually a few years of teaching is required before the candidate can begin a masters degree program
Test requirements (entry and exit)	Pre-Professional Skills Test reading score of 173 writing 172, mathematics 169	Liberal arts and Sciences Test, Assessment of Teaching Skills (written and video), GREs (to be admitted to program), Content specialty test in Social Studies
Duration	One year after undergraduate degree	One year after undergraduate degree and four years of teaching

Table 1. Continued

State	New York	Texas
Traditional or Alternative	alternative	traditional
School	New York City program	University of Houston
Level examined	middle school	middle school
Subject examined	social studies	social studies
Basic requirements	Nomination by school district, B.A. with major in history as well as eighteen semester hours of professional education, one year of foreign language study	Major in history, economics or political science, 2.5 GPA overall and in field of certification, completion of university English requirements, and sixty semester hours of courses completed, C or better in speech communication course, application completed during junior year
Course requirements within the program	One year of teaching with preparatory provisional certificate, which is only valid for four years, during which time all of the traditional requirements must be completed (see above)	Computer literacy, English composition, physical education, six semester hours of cultural heritage courses, six hours US history, six hours psychology, six hours political science, thirty semester hours history, including eighteen advanced, eighteen hours professional education, including teaching methods, educational psychology, etc.
Student teaching requirements	None prior to start of program	Two semesters student teaching
Test requirements (entry and exit)	Liberal arts and Sciences Test, Assessment of Teaching Skills (written and video), GREs (to be admitted to program), Content Specialty Test in Social Studies	Texas Academic Skills Program (can be exempted with sufficient SAT or ACT scores), Examination for the Certification of Educators in Texas (taken at the end of program)
Duration	No training required immediately after college, but masters degree program requires approximately one year	Completed during time as an undergraduate (four-year program)

Table 1. Continued

State	Texas
Traditional or Alternative	alternative
School	Region XIII alternative certification program
Level examined	middle school
Subject examined	social studies
Basic requirements	B.A. with eighteen semester hours in economics, geography, history, and government, and twenty-four semester hours in one of them (twelve of which must be upper division), 2.5 GPA in major in 2.5 GPA overall
Course requirements within the program	Curriculum which focuses on content knowledge, pedagogy, learner diversity, professional responsibilities, and specialized knowledge and skills for level and subject of teaching. For three months, classes are held thirteen hours/week. After internship begins, twelve hours/month
Student teaching requirements	Two weeks of student teaching and one year of teaching experience
Test requirements (entry and exit)	Texas Academic Skills Program (can be exempted with sufficient SAT or ACT scores), Examination for the Certification of Educators in Texas (taken at the end of program)"
Duration	Three months of part time classes and one year of teaching experience

The National Board for Professional Teaching Standards: Can It Live Up to Its Promise?

Danielle Dunne Wilcox

The National Board for Professional Teaching Standards has been lauded by educators and public officials from the Clinton administration to Republican governors. While the goal of the Board—identifying and certifying master teachers—has broad appeal, in fact the activities and processes of the Board have not been subject to serious evaluation. This pioneering report explores in depth how National Board certification works, from the portfolios submitted by applicants to the training of scorers. After scrutinizing the Board's standards, the validity of its scoring system, and extant research on its effectiveness, Wilcox concludes that the Board's standards and assessments are too flawed to support the claims that are being made on its behalf.

Introduction

In the nation's ongoing efforts to strengthen student performance, teacher quality has emerged as a focal point for reform. President Clinton singled out this issue in his 1999 State of the Union message, stating that, "all states and school districts must be held responsible for the quality of their teachers."[1] Secretary of Education Richard Riley went further, arguing in his 1999 State of American Education speech that public education cannot improve "unless we make teaching a first class profession."[2] One key to accomplishing this, according to Riley, is the credentialing service offered by the National Board for Professional Teaching Standards (NBPTS).

Founded in 1987 and headquartered in Southfield, Michigan, the National Board is a private organization that seeks to identify and certify master teachers in different areas of specialization, such as high-school math or elementary education. It likens itself to medical specialty boards that certify doctors for superior levels of competency in such specialties as cardiology, surgery, or neurology. Board certification in medicine is not a prerequisite in order to practice; rather, it is a way for a doctor to demonstrate that

she is an exceptionally knowledgeable and capable physician. In turn, medical board certification affords patients greater confidence in the quality of a doctor's judgment and care. The NBPTS has set similar goals for itself. It seeks to certify teachers who have demonstrated that they are highly accomplished; hence parents and taxpayers should feel confident that these specially-designated teachers will enhance students' learning.

The National Board sets three main goals for itself: (1) to promulgate high standards for what accomplished teachers should know and do, (2) to develop and operate a national, voluntary certification system to assess and certify teachers who meet these standards, and (3) to advance education-related reforms for the purpose of improving student learning.[3] Several objectives are at work here: providing teachers with a nationally portable license, keeping good teachers in the field, raising the quality of the teaching field overall, and boosting the level of public respect for teachers. As one National Board Certified Teacher (NBCT) stated, "Teachers need more respect. We need to be treated like professionals."

At the national level, President Clinton and Secretary Riley are promoting NBPTS. In addition to hosting a White House ceremony in 1997 to commemorate its tenth anniversary, Clinton used his State of the Union speech to announce federal support for NBPTS certification of 100,000 teachers. At the state level, legislators, NBCTs and teachers' union leaders are promoting National Board certification as an engine of reform.

Yet for all the ballyhoo, any initiative designed to improve teacher quality should be subject to rigorous assessments to ensure that it is actually accomplishing that important purpose. In this report, we look at the history and structure of the Board and review what candidates experience as they go through the certification process. This inquiry forms the background for an appraisal of the likelihood that NBPTS actually offers a valuable solution to the intransigent problem of teacher quality.

The NBPTS seeks to certify teachers who have demonstrated that they are highly accomplished.

A Board is Born

Myron Lieberman, formerly an American Federation of Teachers official, now a union critic and president of the Education Policy Institute, first imagined a national board for teachers in his 1960 book, *The Future of Public Education*.[4] Actually, he visualized multiple boards, each representing a different academic discipline. For example, he hoped the National Council of Teachers of Mathematics in collaboration with the American Mathematical Association would come up with standards and assessments for math teachers. A neutral organization, such as the Educational Testing Service, would administer the tests. Lieberman advanced the concept of education specialty boards as a way to counter union anxieties that merit pay would inevitably be associated with favoritism, i.e., some teachers would receive merit pay not

because they were effective but because they had a cozy relationship with the principal. The unions dealt with this concern in most districts by negotiating uniform salary schedules. Lieberman criticized that approach because it deterred many good teaching prospects who would choose other fields that promised higher income and greater opportunity for individual attainment. His national certification boards were designed to eliminate favoritism and give states the confidence and political support from the unions to allow some teachers to earn higher salaries.

During the early 1960s, Lieberman unsuccessfully sought funds to implement voluntary national board certification. He reluctantly set aside the idea until 1985, when he revived it as a proposal to American Federation of Teachers president Albert Shanker. Lieberman suspected that Shanker, then under fire from state legislators for opposing merit pay, would welcome an approach that was less vulnerable to traditional union concerns. With Lieberman's permission, Shanker publicized the idea.

Membership on the Board is configured in such a way as to ensure that teachers and their unions are in charge.

Indeed, he did more. Relying heavily on his influence with the Carnegie Forum on Education and the Economy, Shanker parlayed the concept into a major study by the Carnegie Task Force on Teaching as a Profession. With the alarms from the 1983 *A Nation at Risk* report still reverberating through America, the Carnegie Forum was well positioned to offer education reform resolutions that would stir public interest. The result was publication in 1986 of *A Nation Prepared: Teachers for the 21st Century*. This manifesto called, inter alia, for establishment of a national board that would: (1) promulgate high standards for what accomplished teachers should know and be able to do; (2) develop and operate a national, voluntary certification system to assess and certify teachers who meet these standards; and (3) advance education related reforms.[5] This document provided a blueprint for a single national board that would credential teachers in their various areas of specialization.

By this time, Lieberman himself had grown wary. He had proposed the board concept as something external to the unions. By the time Carnegie released its report, however, it was clear that the Board would be dominated by the National Education Association (NEA) and American Federation of Teachers (AFT), the nation's two largest teachers' unions. But Lieberman's change of heart did not impede the plan. Under Shanker's influence and that of other prestigious and loquacious task force members, such as Governor James Hunt (Dem.) of North Carolina, the concept gathered steam.

The Board came to life when the Carnegie Corporation made a $1 million start-up grant and appointed its first twenty-nine members in May 1987. Many of the original members were drawn from the Carnegie Task Force. At one of their first meetings they elected thirty-four additional members, bringing the Board's total membership to sixty-three. The first and to date only president, chosen by a vote of the Board's

twenty-nine original members, is James Kelly, a former high-school history teacher and officer at the Ford Foundation. (Kelly, having served twelve years, will retire at the end of 1999.) With leadership in place, the Board set about the task of raising funds and developing a procedure for certification.

Membership on the Board is configured in such a way as to ensure that teachers and their unions are in charge. A key provision of the bylaws specifies that a majority of the Board must be active teachers.[6] Today, forty-two of the Board's sixty-three directors are teachers. Fourteen are selected for their record of teaching accomplishment. Another fourteen are recognized leaders in their subject area. The final fourteen are leaders of the two teachers' unions at the local, state or national levels, with half of this group representing each union.[7] Although only fourteen of the sixty-three members *must* be NEA/AFT leaders, all but a couple of the other twenty-eight teachers on the Board are union members. Thus, nearly two-thirds of NBPTS directors are members or leaders of the NEA and AFT. The remaining twenty-one directors come from a variety of fields, but at least half must be public officials with governance or management responsibilities for public schools. This group now ranges from state governors, such as Gary Locke of Washington to Portland Superintendent Benjamin Canada to Gail Huffman-Joley, Dean of the School of Education at Indiana State University.

The development of standards and assessments for a certificate area follows a lengthy and involved process.

Funding

The NBPTS set to work raising money for its work and was, by all measures, quite successful. In addition to continuing grants from the Carnegie Corporation, the Board received funding from the DeWitt Wallace-Reader's Digest Fund, Ford Foundation, and Pew Charitable Trusts, among others. By 1988, the Board had also found friends in the U.S. Senate. Senator Christopher Dodd (D-CT) introduced legislation (S. 2698) that would allocate $25 million to the Board's work. The Board justified its need for federal funding to speed up the design and implementation of a national certification process. Former Governor Thomas Kean (R-NJ), then a member of the NBPTS board of directors, testified before Congress, "We could do it without the federal government, but it would take ten years, and I don't think the nation can wait that long."[8] Financial support for the Board was eventually approved by the Democratic-controlled Congress over the objections of President Reagan's Department of Education. The Department of Education disputed such a large appropriation because NBPTS had not submitted a "detailed research agenda" which was "customary procedure" at the time. Chester E. Finn Jr., then assistant secretary of education (and current president of the Thomas B. Fordham Foundation) testified against Dodd's bill, noting that the board's backers "want to have their cake and eat it too" by seeking substantial federal aid but insisting they remain free from federal control.[9] The bill that eventually passed allocated $19.3 million to the Board over

four years for research and development of certificates. But that was not the end. To this day, NBPTS continues to receive federal funding. Most recently, the Board received $18.5 million in FY1998 and the same amount in FY1999.[10] By the end of 1999, the Board will have absorbed over $70 million in federal aid with essentially no oversight or accountability.

Developing Standards and Assessment

With financial backing secured, the Board began developing standards and assessments. First, it promulgated five core propositions to be used as the basis for those standards:

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities.[11]
   [See Appendix A for the Board's full statement of each proposition.]

The NBPTS has decided to certify teachers in thirty-three different fields. The areas overlap with but do not mirror state licensing requirements. Because licensing requirements vary in number and scope, it would be impossible for the Board to have them mesh perfectly with all state licenses. Instead, the Board designed its certificate areas around two matrices. One divides them by students' developmental ages. This matrix encompasses

- Early Childhood (ages 3-8);
- Middle Childhood (ages 7-12);
- Early Adolescence (ages 11-15);
- Adolescence & Young Adulthood (ages 14-18+).

The other matrix is content area, such as mathematics, English language arts and "generalist," a term that implies the teacher should know about all subjects for the age group she teaches. As an example, a high-school biology teacher would apply to become board-certified in "Adolescence & Young Adulthood/Science." A fourth-grade classroom teacher would seek certification as a "Middle Childhood/Generalist." [See Appendix B for a full list of the thirty-three certificate areas under consideration.] Today, twelve of the thirty-three certificates are available, while the remaining certificates are in various stages of development. According to Dr. Valerie French, NBPTS Vice President for Assessment Development, all thirty-three will be available in five

years. A certificate is good for ten years and renewable, although NBPTS is still working out how it will handle recertification.

The development of standards and assessments for a certificate area follows a lengthy and involved process. First, the Board appoints a standards committee. The majority of members are active teachers who are distinguished in their field. The rest are school and district administrators and professors drawn from the field under discussion, from child development, and from teacher education. Second, the committee is charged with developing standards that

- highlight specific aspects of teaching that reflect accomplished practice, while emphasizing the holistic nature of teaching;
- describe how the standards come to life in different settings;
- identify the knowledge, skills, and dispositions that support a teacher's performance at a high level;
- show how a teacher's professional judgment is reflected in observable actions; and
- reflect the five propositions outlined above.[12]

The committee's draft standards are reviewed by the Certification Standards Working Group (a subcommittee of the Board itself) before going into a public review process, where they are presented at regional and national meetings and made available to interested individuals. (Currently, Early Childhood and Middle Childhood Art draft standards are available for public review.) The review process lasts three months, after which the Board finalizes the standards.

In 1999, the Board anticipates that 7,700-plus candidates will seek certification in twelve different fields.

Each certificate area is then developed through an Assessment Development Laboratory (ADL). Working with the NBPTS, the ADL develops and field tests assessment instruments and produces related resources, such as test manuals, instructions for candidates and examiners, and scoring keys.[13]

NBPTS decided early that its assessment mechanism would be designed to evaluate teachers' "pedagogical content knowledge." In order to evaluate a teacher's skill, the Board opted to create an assessment system that would attempt to evaluate a teacher in the act of teaching. Hence, Board certification involves no objective tests. Instead, it focuses on teacher-submitted evidence of accomplishment, as documented in lesson plans, evaluations of their students' work, and videotapes of their classes. Additionally, teachers respond to four timed essay questions about hypothetical teaching situations.

Divining a Master Teacher

Although Board certification is still new, demand for it has steadily increased. NBPTS spent seven years developing its first certificate areas: Early Adolescence/English Language Arts and Early Adolescence/General. In January 1995, the Board certified its first eighty-one teachers. Over the last four years, 1,836 teachers have been Board certified. Each year, NBPTS has seen the number of applicants triple. In 1999, the Board anticipates that 7,700-plus candidates will seek certification in twelve different fields.

What Motivates Teachers to Pursue Certification?

Although the Board advertises, teachers often learn about it from NBCTs, from district coordinators of professional development, and from union representatives. Bob Matthews, a Maryland NBCT, said he heard his superintendent praise it and thought he might like to try it in order to improve both his teaching and his marketability.[14] Another teacher, Margaret Johnson, had been involved with North Carolina's new state standards board, which was modeling itself on NBPTS. Johnson decided she should become certified to prove to herself and others that she really was a "master teacher" who belonged on the state teaching standards board. Natalie Crane, who had already been chosen as a state teacher of the year, viewed Board certification as a professional challenge. She was relieved that she passed inasmuch as she "had put [her] reputation on the line." Other teachers sought certification in order to receive the recognition they thought was their due. Teachers also acknowledged an interest in the salary bonuses that thirteen states now offer (and more are considering).

How it Works

To be eligible, candidates must meet several basic requirements: they must have earned a bachelor's degree, hold a valid teaching license in states that require it, and have three years of teaching experience. Private-school teachers who do not hold a teaching license but are teaching in an accredited school recognized by the state are also eligible to apply.

The certification process from start to finish takes a full year, sometimes longer. Applicants who meet the three basic eligibility requirements must pay an application fee of $2,000. Although this fee is fairly steep, there are multiple ways of covering it. The federal government has appropriated funds to subsidize ten candidates per year in each state; and many states and districts pay for most, and sometimes all, of the application fee for a limited number of candidates. Matthews, for example, applied to the Maryland Department of Education to be included among the fifty teachers that it sponsors. The NEA and AFT also offer loan and subsidy programs for their members. The final recourse is, of course, paying out of pocket.

Once The Psychological Corporation (TPC), a San Antonio-based firm that processes NBPTS applications receives payment, it sends out the portfolio kit. Each applicant must submit six "performance-based assessment portfolios" and take four "assessment center exercises." The six portfolios break down as follows:

- Entries 1 and 2 require submitting examples of students' work and a reflective commentary about the students' progress;
- Entries 3 and 4 include videotapes of the class at work and a reflective commentary from the teacher;
- Entry 5 asks a teacher to document her involvement in her profession; and
- Entry 6 asks the teacher to document her involvement with her students' families.

The four remaining entries can be taken care of in a single day at a Sylvan Technology Center or other testing site. Applicants are asked four open-response questions and have ninety minutes to respond to each.

Apparently, arrival of "the box," NBPTS lingo for (and a literal description of) the portfolio kit, is a momentous occasion. Matthews said he rushed home from school each day the week the box was due to arrive. The box contains the standards document for the certification field, manuals with meticulous directions about how to prepare the six portfolios, and information about what to expect at the assessment center. For example, someone applying to be certified in Early Adolescence/Social Studies-History would receive a document identifying the twelve standards that the National Board has determined for this field. The box would also provide the teacher with detailed guidance about the preparation of her social studies portfolios.

To provide a better understanding of how candidates' portfolios are assessed, the Board offers a two-day Scoring Institute four times a year. Attendees include NBCTs, local and regional facilitators (people who provide guidance and support to National Board candidates), and education professors who are trying to align their teacher-training curricula with National Board standards and assessment methods. At a recent Scoring Institute in Washington, D.C., the Middle Childhood/Generalist (MC/GEN) certificate area was presented in detail. This area is designed for someone who teaches students from ages seven to twelve and who handles the range of middle-school curriculum: language arts, math, science, social studies and history, the arts and health.[15] Looking more closely at the requirements for this certificate will illumine the process. Although topics vary by certificate field, the structure of the six portfolios and four assessment center exercises remains the same.

Portfolio Entries 1 and 2: Reflecting on Student Work

Entries 1 and 2 ask the teacher to submit examples of her students' work with an accompanying commentary in which she reflects on their progress. For the MC/GEN