DOCUMENT RESUME

ED 379 229 SP 035 730

AUTHOR Darling-Hammond, Linda
TITLE The Current Status of Teaching and Teacher Development in the United States.
PUB DATE Nov 94
NOTE 33p.; Background paper prepared for the National Commission on Teaching and America's Future.
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Comparative Analysis; Educational Change; Elementary Secondary Education; *Faculty Development; Foreign Countries; Higher Education; Preservice Teacher Education; Status; Student Teaching; Teacher Education; *Teacher Education Programs; *Teacher Improvement; Teacher Qualifications; Teacher Recruitment; Teacher Salaries; *Teacher Supply and Demand; *Teaching (Occupation); *Teaching Conditions
IDENTIFIERS Japan; Reform Efforts; Reform Strategies; Switzerland; *United States

ABSTRACT

This paper offers an overview and analysis of the status of teaching as an occupation and of teacher development in the United States. An opening section describes the development of the industrial-based education model that has been in place for this century and the reform movements that have started in the past two decades. A section on the demands of these reforms notes that the rhetoric of school improvement has changed from a language of school reform to a language of school restructuring, as signs of dysfunction in the education system have joined with new social demands for greater education. This section also discusses teacher recruitment and current and future demand for teachers. A section on the status of teaching and teacher development notes that this is a critical moment for transforming the capacity of American teaching by transforming the quality of their preparation as fully half of teachers working in 2005 will be hired in the 1990s. This section discusses efforts and obstacles to improve teacher preparation and professional development. A following section describes teaching and teacher development abroad. Final sections discuss the possibilities for transforming teaching and developing new paradigms for school reform. Contains 77 references. (JB)

THE CURRENT STATUS OF TEACHING AND TEACHER DEVELOPMENT IN THE UNITED STATES

Linda Darling-Hammond

Background paper prepared for the
National Commission on Teaching
and America's Future

November, 1994

THE CURRENT STATUS OF TEACHING AND TEACHER DEVELOPMENT IN THE UNITED STATES

WANTED

College graduate with academic major (master's degree preferred). Excellent communication and leadership skills required. Challenging opportunity to serve 150 clients daily on a tight schedule, developing up to five different products each day to meet individual needs, while also adhering to multiple product specifications. This diversified position allows employee to exercise typing, clerical, law enforcement, and social work skills between assignments and after hours. Adaptability helpful, since suppliers cannot always deliver goods and support services on time. Must be able to work alone without consulting other colleagues. Typical work week 47 hours. Special nature of the work precludes fringe benefits such as access to a telephone or computer, but work has many intrinsic rewards. Starting salary $19,100 with the possibility of earning $29,000 after only 15 years.

This want ad accurately characterized the typical secondary school teaching position in the United States in 1991. It describes an occupation initially structured to process large groups of students through factory model schools -- an occupation that has, over much of this century, sought to employ relatively low-paid entrants and manage their work bureaucratically, with many prescriptions for practice, few investments in teachers' learning, and little opportunity for them to engage in decisions or work collaboratively with one another.

Current education reforms challenge these aspects of contemporary schools, which were designed nearly a century ago when the advent of the manufacturing era transformed the rural one-room schoolhouse to the urban school bureaucracies we now have. For more than a decade, states and districts have been involved in concerted efforts to raise standards for student learning, improve teaching, transform school structures so that they better support student success, and decentralize decisionmaking in order to address problems more effectively at the school site.

These reforms are motivated by major changes in society and the economy which make it clear that individuals who do not succeed at school cannot survive in an increasingly technological economy, and societies which do not succeed at education cannot survive in the global market place. Whereas in 1900, about half the nation's jobs required low or unskilled labor; today fewer than 10% do. And while fewer than 10% of jobs at the beginning of the century were professional or technical positions requiring higher education, more than half of

the new jobs created in this decade will require postsecondary education; 90% will require at least a high school education.[1]

There is little room in today's society for those who cannot manage complexity, find and use resources, and continually learn new technologies, approaches, and occupations. In contrast to low-skilled work on assembly lines, which was designed from above and implemented through routine procedures, work sites increasingly require employees to design their own tasks, plan and evaluate outcomes, and solve problems in teams. Restructured businesses and industry demand better educated, more thoughtful workers for virtually all kinds of jobs[2]. A more complex society also requires citizens who can understand difficult problems and manage ever more complicated social systems.

Consequently, schools are being asked to prepare all students, rather than only a small minority, for "thinking work," and teachers are being asked not just to "cover the curriculum" but to teach in ways that ensure that all students will learn. Teaching diverse learners to perform in these more challenging ways requires changes that cannot be "teacher-proofed" through new textbooks, curriculum mandates, or tests. As state after state has sought to re-create schools so that they can meet 21st century demands, it has become apparent that their success depends fundamentally on teachers: What teachers know and can do is the most important influence on what students can learn.

Reforms aimed at building the capacity of teachers differ from past efforts of educational change which mandated new courses, tests, curricula, and management systems, but did not worry about how they would make it from the Statehouse to the schoolhouse. However, in contrast to teaching in other industrialized countries, supports for teachers and teacher learning in this country are meager. U.S. teachers are typically paid less than other college-educated workers, have lower levels of investment in their knowledge, have less time to work with and learn from each other, and are given less decisionmaking authority.

In addition, there are large inequalities across districts in teachers' salaries and teaching conditions. As a consequence, teacher shortages are common, especially in fields like math and science, where competing occupations offer more attractive opportunities, and in cities and other low-wealth districts where salaries and working conditions are not competitive. The traditional U.S. response to teacher shortages has been to lower standards when vacancies need to be filled. This is producing an increasingly bimodal distribution of teachers.

As teacher demand is growing, and as standards for teachers are being raised, the qualifications and abilities of teachers in advantaged communities are becoming ever more impressive. At the same time, however, over 50,000 teachers annually have been entering teaching on emergency or temporary certificates with little or no preparation at all.[3] Most of these underprepared entrants are hired to teach in low-income schools in central cities and poor rural areas. In stark contrast to their students' needs, these teachers of disadvantaged students are least likely to have encountered knowledge about how children grow, learn, and develop, or about what to do if children are having difficulty.

While the hiring of unprepared teachers is a longstanding tradition in the U.S. going back more than 100 years, the practice had been sharply reduced during the 1970s with recruitment incentives, forgivable loans for college students preparing to teach, Urban Teacher Corps initiatives, and Master of Arts in Teaching (MAT) programs, coupled with wage increases. However, the cancellation of most of these federal supports in 1981 and a decline in salaries and recruitment incentives throughout the decade led to renewed shortages when student enrollments started to climb once again, especially in cities. Between 1987 and 1991, the proportion of new teachers entering teaching with a college major or minor and a license in their fields actually declined from about 80% to 65%.[4]

Thus, while some children are gaining access to teachers who are better qualified than ever before, a growing number of poor and minority children are being taught by teachers who are sorely unprepared for their work.[5] This poses the risk of heightened inequality in opportunities to learn and in outcomes of schooling, with all of the social dangers that implies, at the very time when all students need to be prepared more effectively for the greater challenges they face.

The juxtaposition of our need for substantially more successful schools and current problems in staffing them with enough well-prepared teachers raise many questions: What do teachers need to know and be able to do to succeed at the challenging goals posed by current school reforms? How can teacher preparation be strengthened to ensure that teachers know how to teach their subjects and all students well? How can schools be organized to better support student and teacher learning? What steps are needed to recruit and hire well-prepared teachers in all communities, and to keep them in the profession? These questions are at the heart of current efforts to redesign education and of this Commission's charge to develop a blueprint for recruiting, preparing, and supporting a teaching force capable of teaching all children to high standards in all communities.

The Demands of Current School Reforms

Over the last decade the rhetoric of school improvement has changed from a language of school reform to a language of school restructuring, as signs of dysfunction in the education system have joined with new social demands for greater education. In brief sketch, these include

- A rapidly changing industrial base providing fewer low-skilled manufacturing jobs and more demand for advanced technological skills and problem-solving abilities.[6]

- An educational system that prepares only a small share of students for the higher levels of performance these jobs require. According to national and international assessments, fewer than 10% of students are prepared to do the kinds of thinking and problem solving required for college level work in mathematics, science, reading, and writing.[7] U.S. students score near the bottom

of most international comparisons in mathematics and science, especially on tasks requiring critical thinking and problem solving skills.[8]

o Continuing high dropout rates, which hover at 25% for all U.S. students and reach 50% for minority youth in central cities, for whom unemployment rates remain almost that high as well.[9]

o Fewer options for students whom schools have failed. A male high school dropout in 1986, for example, had only one chance in three of being employed full-time; this is half the odds of 20 years earlier. If employed, he earned only $6,700 a year, about half of what a high school dropout earned in 1973.[10]

o Crime and delinquency that are also linked to inadequate education. More than half the adult prison population is functionally illiterate, and nearly 40% of adjudicated juvenile delinquents have treatable learning disabilities that were not diagnosed in the schools.

Rapid changes in society mean that the traditional outcomes of our school system -- academic success for some and failure for many others -- are now more problematic than they have ever been before. While American schools have had high dropout rates and limited success with many graduates in past decades, there were decent jobs on the farm or in the factory to accommodate most of those for whom schooling was not a success. This is no longer true. Just as the last century's massive transformation from an agrarian to an industrial society created urban school bureaucracies to replace earlier one room schoolhouses, so this century's movement into a high-technology information age is demanding a new form of education and new forms for school organizations.

Change proposals have shifted from efforts intended to make our current educational system perform more efficiently to efforts intended to fundamentally rethink how schools are designed, how teaching and learning are pursued, and what goals for schooling are sought. In order to prepare all students for thinking work -- for framing problems; finding, integrating and synthesizing information; creating new solutions; learning on their own; and working cooperatively -- schools must create bridges between the very different experiences of individual learners and a common set of much more demanding curriculum goals. Teachers must use a wide variety of teaching approaches to build on the different experiences, intelligences, prior knowledge, and learning styles of their students. They must understand what their students think and how they learn, as well as what they know.

There is another challenge, as well, that requires a more knowledgeable and highly skilled teaching force: the social setting for teaching is ever more demanding. One out of four American children now lives in poverty, and the largest wave of immigrants since the turn of the last century is entering schools. Children who encounter a wide variety of stresses in their families and communities are present in virtually every classroom. Educators are striving to attain more ambitious goals at a time when schools are more inclusive than they have ever been

before. More students stay in school longer, and more students with special needs -- many of them unserved several decades ago -- are served in more mainstreamed settings. The need to match learning opportunities to the needs of individual children defies the single, formulaic approach to delivering lessons that has characterized much regulation of teaching, many staff development programs, and a number of teacher evaluation instruments in the past.

The new mission for education clearly requires attention to how teachers can acquire new knowledge and skills. In order to "teach for understanding," [11] teachers must understand the many different ways in which children learn and develop as well as the structures of subject areas and a variety of alternatives for both promoting and assessing learning.[12] As McLaughlin and Talbert (1993) note:

> Teaching for understanding promises to enhance the kinds of cognitive outcomes for students that the American system has heretofore been notoriously ineffective at producing.... [However], it requires change not only in what is taught but also in how it is taught.... Teaching for understanding requires teachers to have comprehensive and in-depth knowledge of subject matter, competence in representation and manipulation of this knowledge in instructional activities, and skill in managing classroom processes in a way that enables active student learning (pp. 2-3).

As these needs have become more obvious, changes have begun to take place in teacher preparation programs across the country, approaches to licensing and accreditation are being reconsidered, and a new National Board for Professional Teaching Standards is beginning to offer recognition to highly accomplished teachers who can teach all learners for understanding. Policy makers and educators increasingly recognize that the capacities teachers need in order to succeed at the 21st century agenda for education can only be widely acquired throughout the teaching force by major reforms of teacher preparation, ongoing professional development, and major restructuring of the systems by which states and school districts license, hire, induct, support, and provide for the continual learning of teachers.[13] The recently enacted federal Goals 2000: Educate America Act links new standards for students to much expanded professional development for teachers. States and districts are beginning to rethink how teachers' work is structured in schools, so that teachers have greater opportunities to work collegially and to continually improve their knowledge and skills, and so that students and teachers have greater opportunities to work intensively together over time. In this way, teachers can come to know the minds of their students well.

These efforts to improve teaching and teacher preparation have thus far been isolated and piecemeal, however, and have not yet been developed as a coherent plan linked to other school reform efforts and integrated across the various stages of the teaching career -- from initial recruitment and preparation, through induction and ongoing professional development, to the demonstration and sharing of highly accomplished practice among expert, veteran teachers. Development of such a coherent plan should take into account the current status of teaching and teacher development and the possibilities for fundamentally different approaches and outcomes.

It must also consider the issues of how to recruit and retain an adequate supply of well-prepared teachers for all schools.

Recruiting Teachers

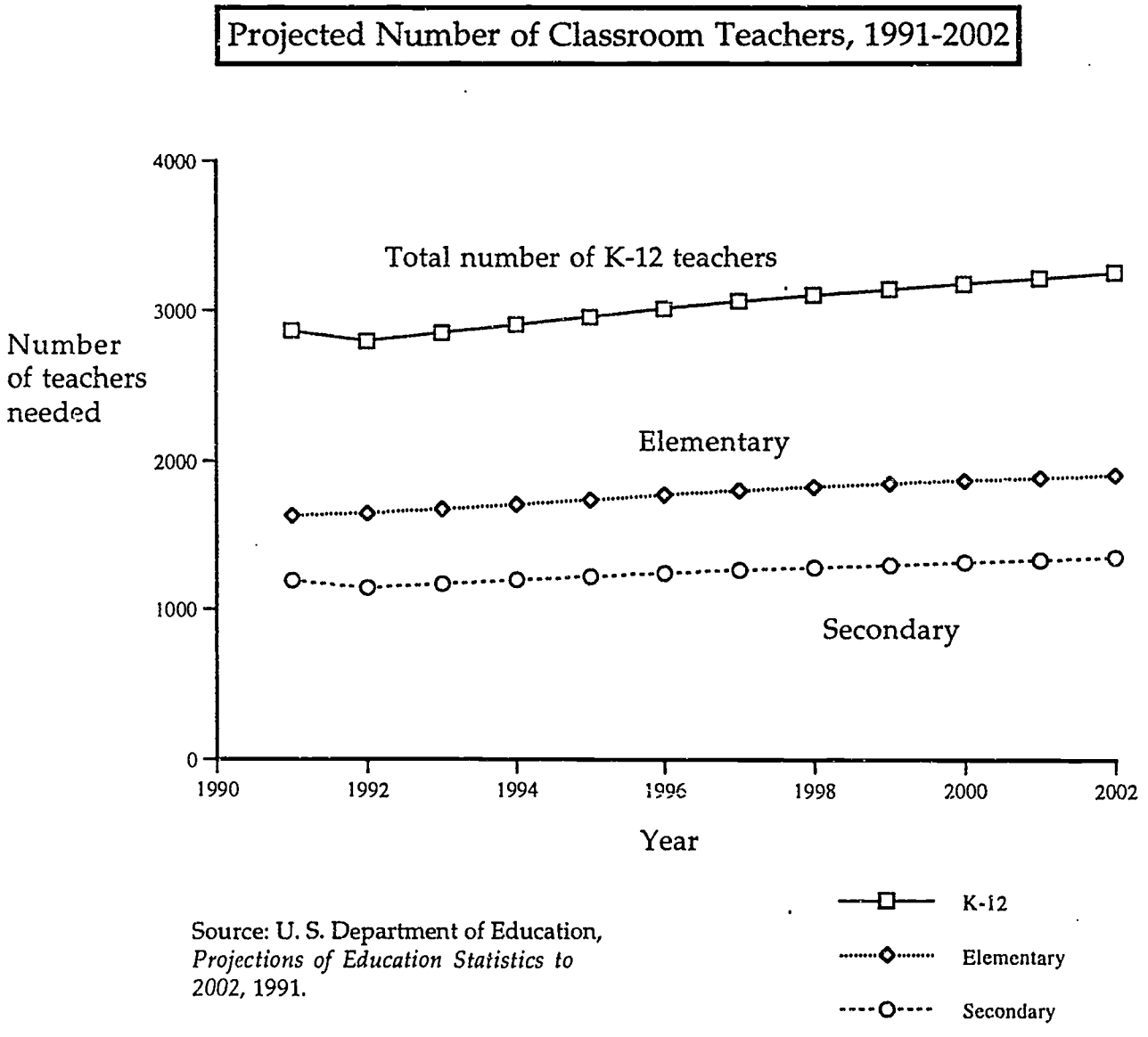
Over the next two decades the demand for teachers will increase substantially. Higher birth rates and immigration have caused the teaching force to grow from 2.5 million in 1980 to 2.8 million in 1991 and a projected 3.3 million by the year 2002.[14] (See Figure 1.) The teaching force has also aged considerably since the 1970s, when the last major hiring boom occurred. Nearly one fourth of teachers were over 50 in 1991, which means that we will be faced with replacing large numbers of teachers who will be retiring over this decade and the next; many of them -- such as the older-than-average population of mathematics and science teachers -- in fields where there are already shortages. Over the next decade, more than 200,000 teachers will need to be hired annually.[15]

Therefore, investment in teacher recruitment, preparation, licensing, induction, and ongoing development is crucial at this time. While demand for new teachers is increasing, the supply of newly prepared teachers dropped sharply throughout the 1970s and '80s and is just beginning to increase once again. Between 1972 and 1987, the number of bachelor's degrees conferred in education plummeted by over 50%, from nearly 200,000 annually to under 100,000.[16] The decline was especially severe for academically able minority candidates and women, who shifted their preferences from education to business, health professions, law, and other occupations during those years.[17] As these other professions opened up to women and minorities, the captive labor force for teaching -- which had given teaching more capable entrants than its salaries would otherwise have attracted -- began to disappear, forcing it to compete with other occupations for talented entrants.

Since the late 1980s, attractions to teaching have improved somewhat, with salary increases closing some of the gap between teaching and other occupations, and returning teachers to the wage level they had received in 1972 before a decade of decline in real salaries.[18] This has helped propel increases in teacher supply and quality. In contrast to the 1980s, current teacher education students have better academic records than most other college students.[19] At current rates of increase in supply, we might optimistically expect the number of newly prepared teachers to soon reach 150,000 annually for the more than 200,000 openings to be filled. Beyond that, a wide range of policy choices yet unmade will determine future trends. Obviously, teaching vacancies are being, and will continue to be, filled from other sources. Both attracting and retaining qualified teachers at higher rates will be essential to school quality.

While teachers' salaries have improved in recent years, they remain lower than those of other similarly-educated workers. Overall U.S. teachers earn 20 to 30% less than other workers with the same amount of education and experience. In 1991, U.S. beginning teachers' salaries of $19,100 ranked above those of service workers, but below those of every other occupation held by recent college graduates, including clerical workers, technicians, and laborers, and

FIGURE 1



Source: U. S. Department of Education, *Projections of Education Statistics to 2002*, 1991.

substantially below the $30,000 or more paid to beginning computer programmers, engineers, and health professionals.[20] (See Figure 2).

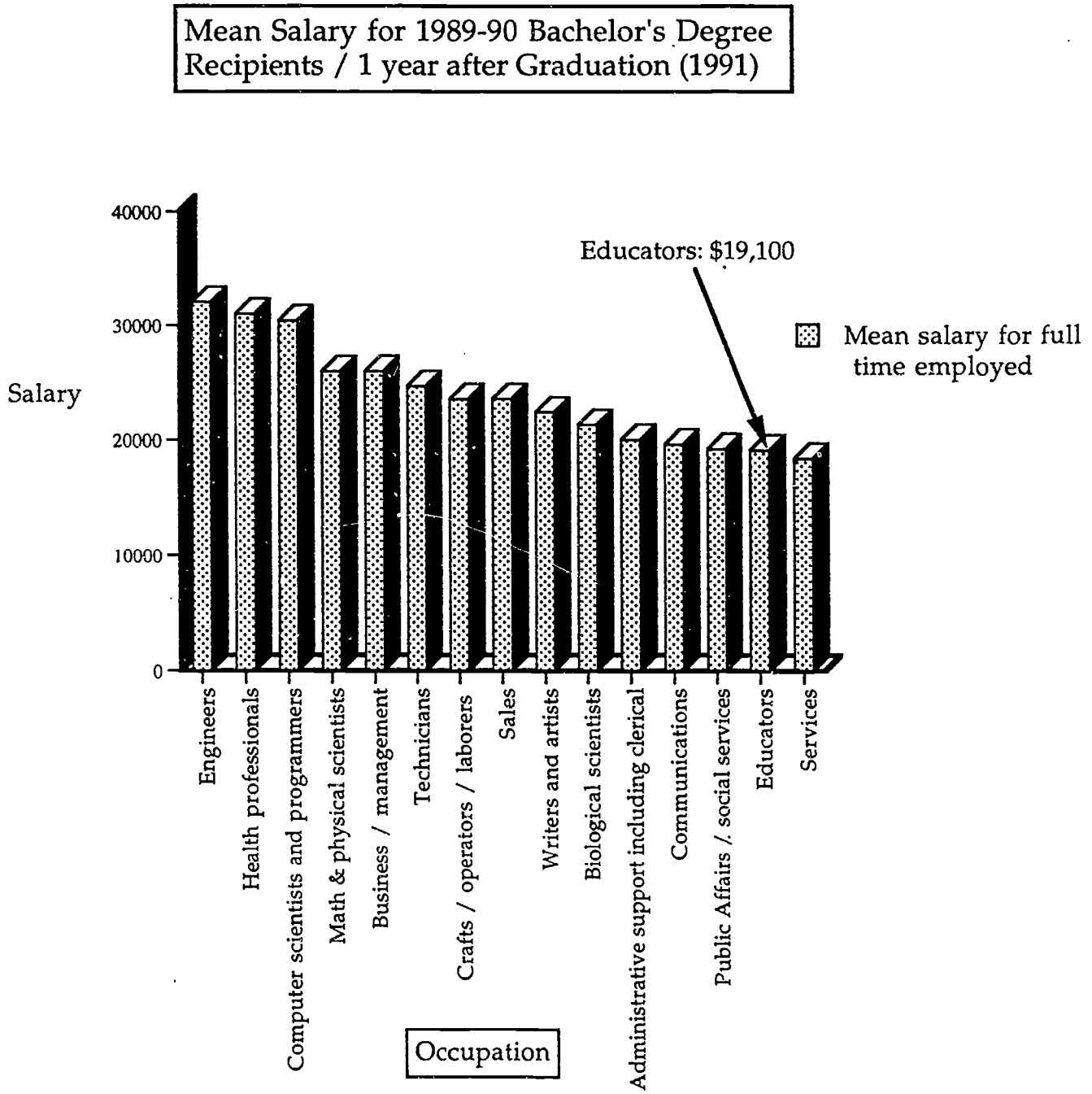
Teachers' salaries vary greatly among districts and states. For example, average salaries in 1990-91 ranged from $20,354 in South Dakota to $43,326 in Connecticut.[21] Even within a single labor market, there is often a marked difference in teachers' salaries based on the wealth and spending choices of various districts. Typically, teachers in affluent suburban districts earn more than those in central cities or more rural communities within the same area. These variations contribute to surpluses of qualified teachers in some locations and shortages in others, and they influence teacher retention, especially early in a teacher's career. Those who are better paid tend to stay in teaching longer than those with lower salaries.[22]

Recurring shortages of teachers have characterized the U.S. labor market for most of the twentieth century, with the exception of a brief period of declining student enrollments during the late 1970s and early 1980s.[23] Currently, shortages are most pronounced in areas like bilingual education, special education, physics, chemistry, mathematics, and computer science,[24] in central cities, and in growing regions of the country, such as the South and West.[25] In 1991, nearly 10% of all teachers and one fourth of new teachers lacked a proper license in their field; however, the proportions were more than twice as high in central cities. In New York City, for example, 2,600 of the 4,500 teachers hired in 1992 were unlicensed, bringing the total number of such teachers in the city at that time to 9,600.[26]

Maintaining an adequate supply of well-prepared recruits is even harder during times of substantial new hiring, because new teachers leave at much greater rates than mid-career teachers,[27] particularly if they do not receive mentoring or support during their first years of teaching. Typically, 30 to 50% of beginning teachers leave teaching within their first five years.[28] Teachers in shortage fields, such as the physical sciences, also tend to leave more quickly and at higher rates.[29] New teachers often leave because they are given the most challenging teaching assignments and left to sink or swim with little or no support. The kinds of supervised internships provided for new entrants in other professions -- architects, psychologists, nurses, doctors, engineers -- are largely absent in teaching, even though they have proven to be quite effective in the few places where they exist.[30]

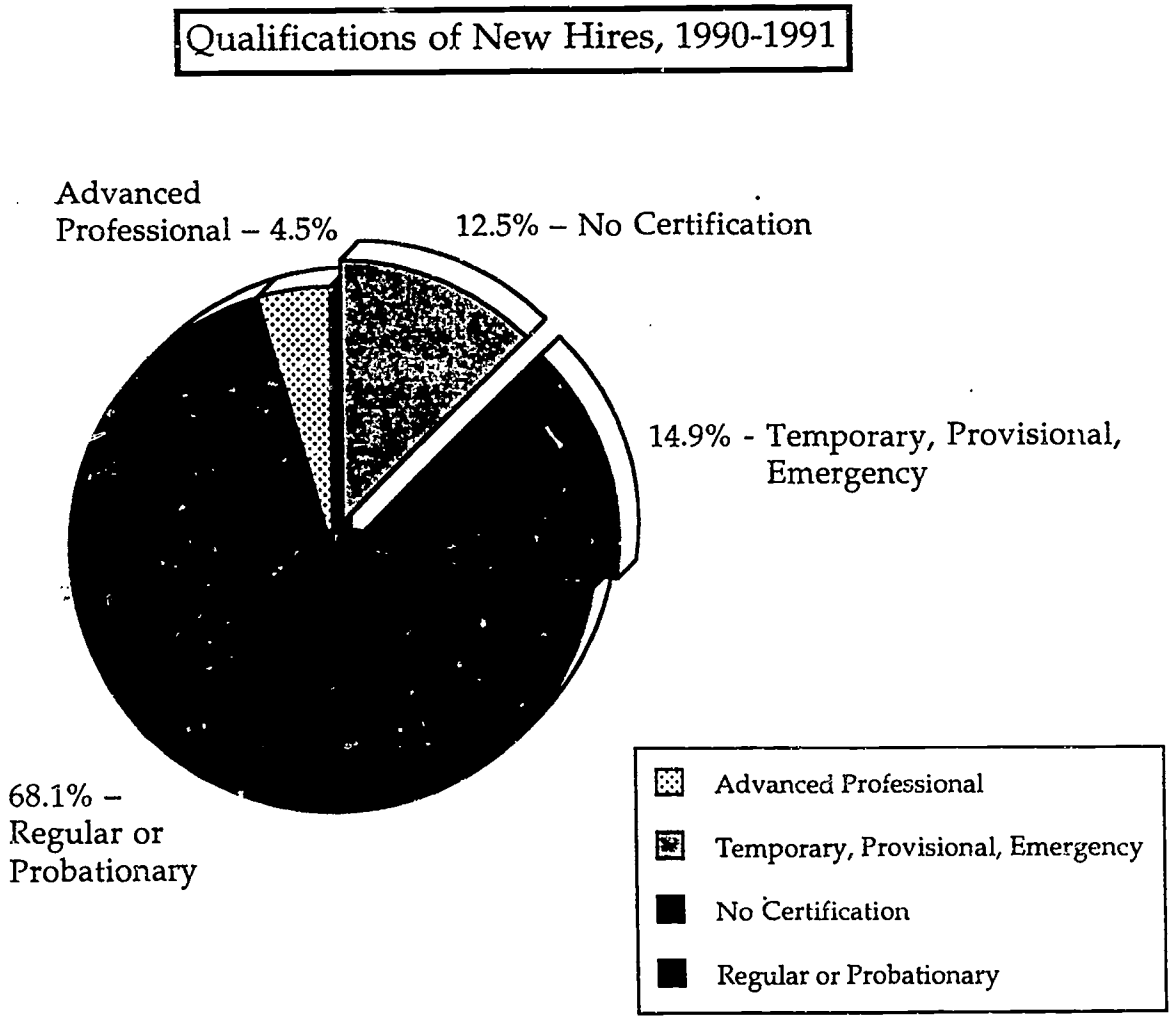
Some states and districts have addressed shortages by increasing salaries and providing scholarships and other incentives for prospective teachers. Others have instead reduced standards for entry by establishing alternative routes to certification or expanding the use of substandard and/or temporary credentials.[31] Despite current efforts to raise licensing standards for new teachers, more than one in four new hires in 1991 held either a substandard certificate or none at all. (See Figure 3.) Not surprisingly, those who were hired without certification were concentrated in shortage fields. One-third or more of all new teachers assigned to teach mathematics, science, social studies, physical education, and special education were neither certified nor eligible for certification in those fields.[32] These unlicensed entrants were younger and had significantly lower GPAs in college than other new teachers.[33]

FIGURE 2



Source: U. S. Department of Education,
1991 Recent College Graduates Survey.

FIGURE 3



Source: Unpublished tabulations, NDRC, 1993.

The curricular implications of these shortages have not yet been fully reckoned with. Chronic shortages of mathematics and science teachers over the past 40 years, for example, have created a vicious cycle in which generations of students have received suboptimal instruction in these fields. These shortages reduce students' access to higher-level content in mathematics and science by preparing too few students to take advanced courses and by offering too few teachers to teach them. International studies show that U.S. students receive less rigorous and less well-taught science and mathematics from at least the upper elementary grades throughout secondary school than do students in most other industrialized countries.[34] In any given year, one third of U.S. high schools do not even offer a physics course.[35] And only about 3% of American students have access to calculus, as compared to four or five times that ratio in other counries.[36]

Overall, 15% of all schools and 23% of central-city schools reported in 1991 that they had vacancies they could not fill with a qualified teacher. Schools with higher minority enrollments had the most difficulty filling vacancies.[37] (See Figure 4.) English as a Second Language and bilingual positions were the most difficult to fill; followed by special education and physical sciences[38]. To deal with these shortages, principals hire less qualified teachers, use substitutes, cancel courses, raise class sizes, or ask other teachers to teach outside their field of preparation.

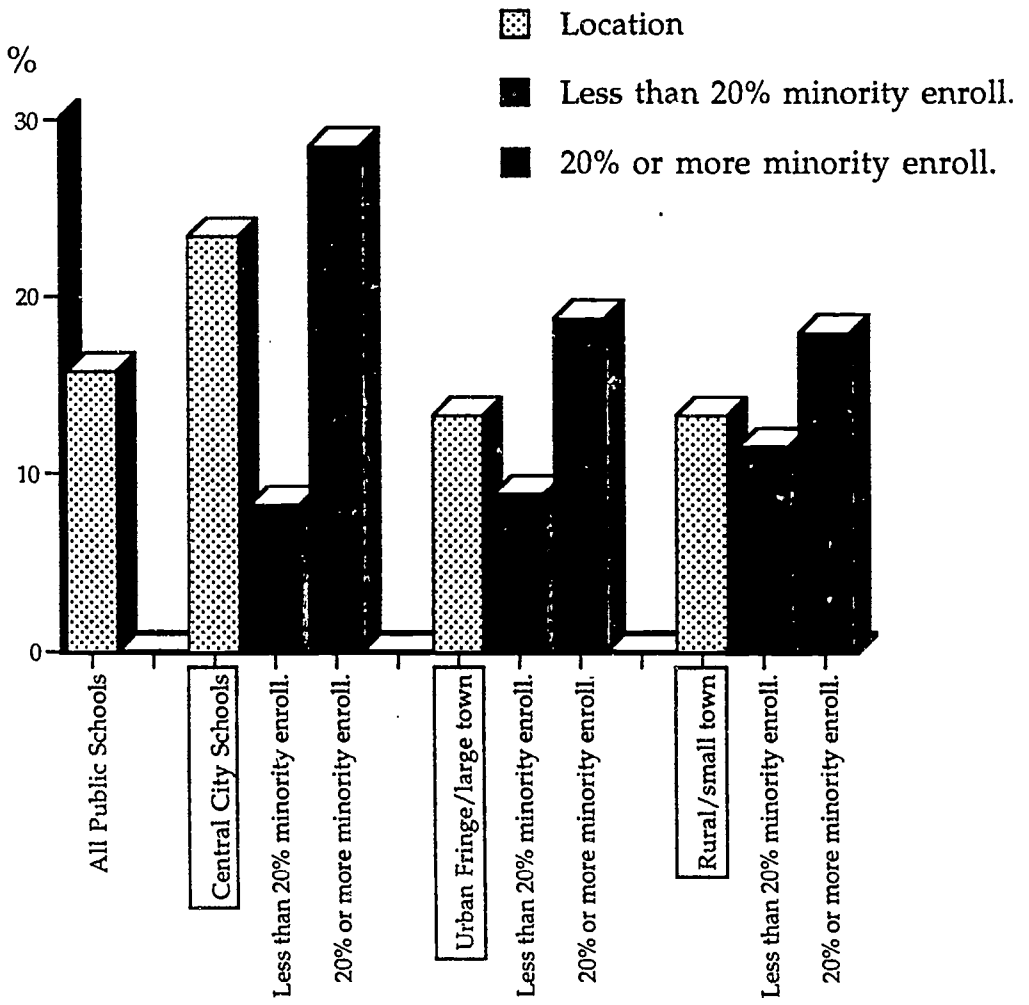
Out-of-field teaching is common. Fully one in five public school teachers reported in 1987-88 that they were not teaching in the area in which they felt best qualified. As a result of these problems, inner-city high school students in high-minority schools, for example, have only have a 50% chance of being taught by a qualified mathematics or science teacher.[39] (See Figure 5.) Many children in central city schools are taught throughout their entire school careers by a parade of short-term substitutes, inexperienced teachers who leave before their first year is up, and beginners with little or no preparation.[40]

The prevalence of unlicensed teachers and out-of-field teaching poses real concerns for the quality of education students receive. A large body of research shows that fully qualified teachers are more effective with students than those whose background lacks one or more of the elements required for a license -- subject matter preparation, knowledge about teaching and learning, or guided clinical experience.[41] Research also shows that the differences in teacher qualifications across schools account more than any other factor for the differences in student achievement.[42]

Ironically, while shortages lead to the hiring of unqualified entrants, a great many prospective teachers do not enter the profession after they complete their preparation. Of those who prepared to teach in 1990, only about three fourths applied for teaching jobs and only 58% actually entered teaching the year after their graduation; the proportion is even lower for minority teacher candidates.[43] This happens for a number of reasons. Many prospective teachers have trouble finding employment in areas where they want to work. Although most jobs for new teachers are in less affluent central cities, most teacher education students want to teach in well-heeled suburban schools that tend to have lower turnover

FIGURE 4

Percentage of Schools with Vacancies that Could Not be Filled with a Qualified Teacher (1991)

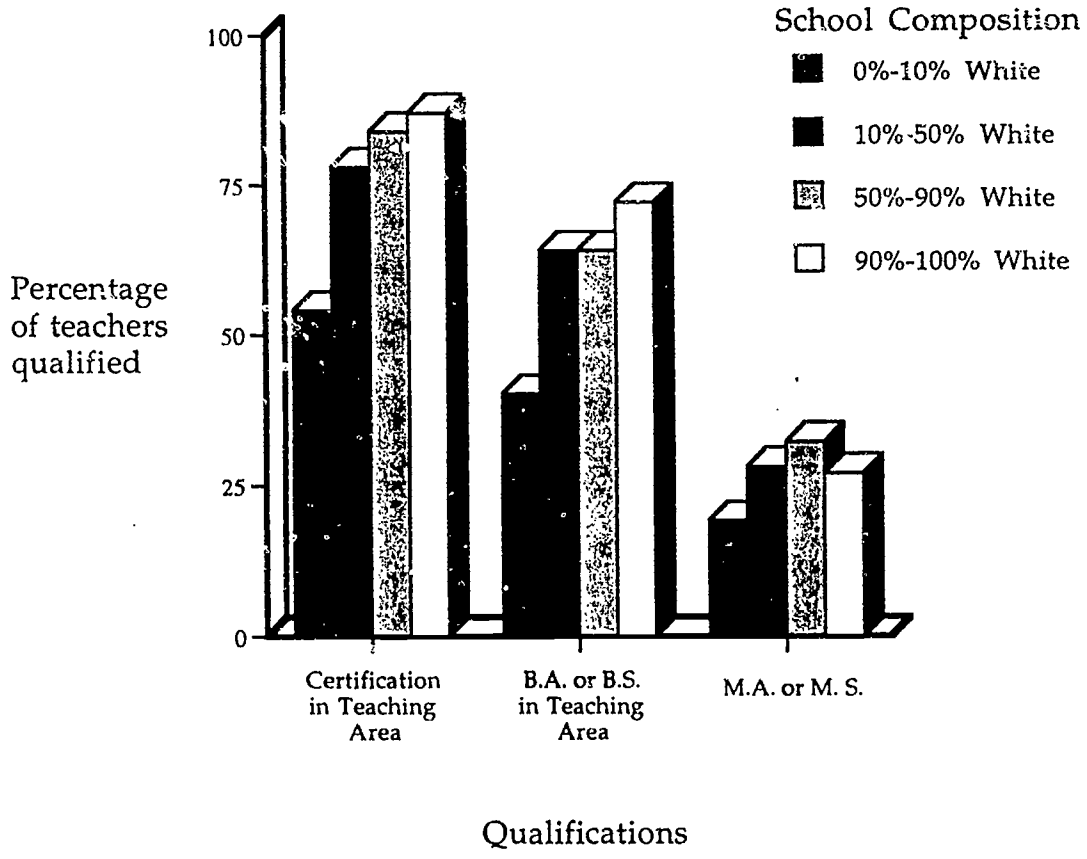


School Location and Type

Source: U. S. Department of Education, National Center for Education Statistics; *Schools and Staffing Survey, 1990-1991,* (school questionaire).

FIGURE 5

Mathematics and Science Teachers' Qualifications, by School Racial Composition



Source: Oakes, J. (1990). *Multiplying inequalities: The unequal distribution of mathematics and science opportunities.* Santa Monica, CA: RAND Corporation

and that hire experienced teachers rather than new teachers.[44] Some have prepared to teach in fields where there is an oversupply of teachers rather than in fields where there are shortages. Others have prepared to teach in fields like mathematics or science but find the alternative jobs in business and industry more appealing. Still others take time off to do something else (graduate school, other employment, travel, or homemaking) after graduating. Some of these individuals enter teaching later; others do not. Some education students prepare to teach as a kind of insurance, while pursuing other possible career opportunities. Finally, some teachers decide not to enter the profession when they encounter difficulties in negotiating the shoals of districts' hiring procedures or when they experience unprofessional hiring practices.[45]

To heighten the paradox, while hiring statistics show more teachers entering low-income districts with marginal qualifications, the overall academic quality of new recruits is stronger than ever before. Nearly one in four newly hired teachers in 1990-91 held at least a master's degree[46] , and a growing number are prepared in much more extensive and rigorous programs than previously. Thus, a dual standard increasingly characterizes entry to teaching: one that provides teachers of dramatically different qualifications for different students, exacerbating growing educational inequalities between the rich and the poor. These trends are related to the different policy choices made by states and districts about how to meet the demand for teachers. The structures and conditions under which teachers' work takes place also influence the distribution of qualified and under-qualified teachers.

The Current Status of Teaching and Teacher Development

Given the fact that fully half of the teachers who will be teaching in the year 2005 will be hired over the next decade (and large-scale hiring will continue into the decade thereafter), this is a critical historical moment for transforming the capacity of the American teaching force by transforming the quality of their preparation. Over the past decade, many schools of education have made great strides in incorporating new understandings of teaching and learning in their programs for prospective teachers. More than 100 have created professional development schools that, like teaching hospitals in medicine, provide new recruits with intensively supervised internships linked to their coursework.[47] Most of these professional development schools are engaged in the simultaneous restructuring of schools and teacher education programs, aiming to transform teaching so that it focuses explicitly on student understanding and learner-centered practices.

These efforts to upgrade teacher preparation contrast with earlier assumptions about teaching: that teachers needed only to master basic routines with cookbook rules to guide them, acting as recipients of packaged knowledge rather than the generators of knowledge about students and teaching. This view is beginning to give way in the face of current understanding that students are not standardized and the tasks of effective teaching are not routine. While the function of teacher preparation is increasingly seen as empowering teachers to own, use, and develop sophisticated knowledge about teaching and learning, a

great many systemic changes are needed for this view to become widespread in preservice and inservice development.

While a growing number of teachers are prepared in rigorous courses of study including intensive internships (increasingly these are five- or occasionally six-year programs), the majority are still prepared in underfunded undergraduate programs that are treated as "cash cows" by their universities. These programs are typically less well-funded than any other department or professional school on campus, producing greater revenues for the education of future businessmen, lawyers, accountants than they spend on the education of the future teachers they serve.[48] Newly launched alternative certification programs include some that provide only a few weeks of training for entering teachers, skipping such fundamentals as learning theory, child development, and subject matter pedagogy and placing recruits in classrooms without previous supervised clinical experience. And a shockingly large number of individuals enter on emergency and temporary certificates, without any preparation any all.

By the standards of other professions and of teacher preparation in other countries, U.S. teacher education has historically been thin, uneven in quality, and underresourced. Unlike other professions, professional accreditation is not currently required of education schools, and only 40% of education schools are accredited; thus, the quality of programs in the more than 1200 institutions that now prepare teachers ranges from excellent to very poor. In addition to a general lack of support for beginning teacher preparation, school districts spend less than one half of 1% of their resources on staff development, as compared to 8 to 10% of expenditures in most corporations and comparable proportions in other countries' schools. District staff development is still characterized by one-shot workshops that have very little effect on practice, rather than more effective, problem-based approaches to teacher learning that are built into teachers' ongoing work with their colleagues. As a result, many U.S. teachers enter the profession with inadequate preparation, and most have very few opportunities to enhance their knowledge and skills over the course of their careers.

The lack of investment in teacher knowledge is a function of the factory model approach to schooling adopted nearly a century ago, which invested (both in businesses and in "modern" school systems) in an administrative bureaucracy to design, monitor, and inspect work rather than in the knowledge of the people doing the work. In this view, teachers do not plan or evaluate their own teaching; instead, they make decisions based on rules and uniform procedures -- texts, curriculum guides, tests, grading and promotion policies -- developed and handed down by others, rather than based on their own understanding of learning and teaching strategies appropriate for diverse learners. As a consequence of this view, preservice and inservice investments in teacher knowledge about curriculum, teaching, and student learning have been quite small compared to those in many other countries that structured teaching more professionally.

In addition, teachers' working conditions still reflect a conception of teaching as consisting primarily of instructing large groups of students, in isolation from colleagues, for

most of the day. Almost everything else a teacher does is considered "released time" or "homework." Time for preparation, planning, working with other colleagues, meeting individually with students or parents, or working on the development of curriculum or assessment measures is rarely available and considered not part of the teacher's main job. With the exception of most teachers' daily "prep period," often spent filling out forms and standing in line for the telephone or photocopy machine, teachers have virtually no planned time to consult with their colleagues on problems of practice.

Despite a shorter school year -- U.S. teachers work an average of 185 days per year[49] -- no other nation requires teachers to teach more hours per week than the U.S. Japanese, Chinese, and most European teachers have substantial time for preparation, curriculum development, and one-on-one work with students, parents, or colleagues, generally teaching large groups of students only about 15 to 20 hours out of a 40 to 45 hour work week.[50] These nations assume that teachers must continually learn and consult with each other to make instructional decisions, rather than stamping students with formulaic lessons as they pass by on a conveyor belt.

By contrast, most U.S. elementary teachers have three or fewer hours for preparation per week (only 8.3 minutes for every hour in the classroom), while secondary teachers generally have five preparation periods per week (13 minutes per hour of classroom instruction). Between 5 and 10% of teachers have no preparation time at school at all [51]. Of course, most teachers are accustomed to working long hours outside of school. On average, teachers work on teaching-related tasks an additional 10 to 15 hours per week outside of school hours. In most schools, teachers are not expected to meet jointly with other teachers, to develop curriculum or assessments, to observe or discuss each other's classes, nor is time generally provided for these kinds of activities. Not surprisingly, in 1988, fewer than 10% of public school teachers said they were highly satisfied with the extent and quality of opportunities to collaborate with colleagues.[52]

Will more time for collegial work and professional development ever be financially plausible in U.S. schools? How can other countries afford such a "luxurious" schedule for teachers while spending virtually the same amount per pupil on education overall? While exactly comparable data are difficult to obtain, data on staffing patterns from many different sources all seem to suggest that U.S. schools have invested in a relatively smaller number of lower-paid teachers directed and augmented by larger numbers of inspectors, administrators, and other supervisory staff populating several layers of bureaucratic structures.

Other countries, meanwhile, have allocated education funds primarily to better-paid, better-educated teachers, who comprise virtually all of the employees in schools and who make most of the teaching decisions. So, for example, while fewer than half of all public education employees in the U.S. are actually teachers, teaching staff comprise more than three fourths of all public education employees in Australia and Japan, and more than 80% in Belgium, Germany, the Netherlands, and Spain.[53] These countries invest more of their resources in supporting the work of "front line workers" in schools than in trying to inspect,

monitor, and control that work.

As Figure 6 vividly illustrates, it is possible to provide students with larger numbers of teachers who themselves have greater time for collegial work if resources are allocated differently. With virtually the same numbers of students and dollars per pupil as a typical American school district (Riverside, California), public schools in Zurich, like those in other parts of Europe, provide an intensely student-focused educational environment with twice as many teachers and 10 times as many doctors and nurses per pupil by operating with much smaller administrative staffs and running much smaller, more personalized schools (roughly one fifth the size of American schools). Riverside's more than 1,000 administrative staff nearly equal the number of teachers it employs, and far surpass the modest 113 administrative staff in Zurich. With equal expenditures of instructional funds, Zurich's 2,330 teachers are also better compensated, better prepared, more involved in professional decisionmaking, and better supported with time for collegial work than those in Riverside.[54]

Over time in the U.S., the bureaucratic approach to schooling has led to reduced investments in the actual activities of teaching and learning, and in professional development for teachers. A vicious cycle is created. Because the competence of the teaching force is questioned, there is a perceived need to maintain a large cadre of supervisors and specialists to manage practice, and to administer a wide array of special programs of all kinds. The bureaucratization of schools in turn absorbs the money needed to make adequate investments in classroom teaching. From 1950 to 1980, the number of administrative staff grew at more than twice the rate of the number of teachers in American schools. The U.S. Department of Labor reported that in 1986 school systems employed approximately one administrative staff person for every two-and-one-half teachers.[55] By 1991, the proportion of public school staff who are classroom teachers had declined to only 53% from over 70% in 1950.[56] (See Figure 7).

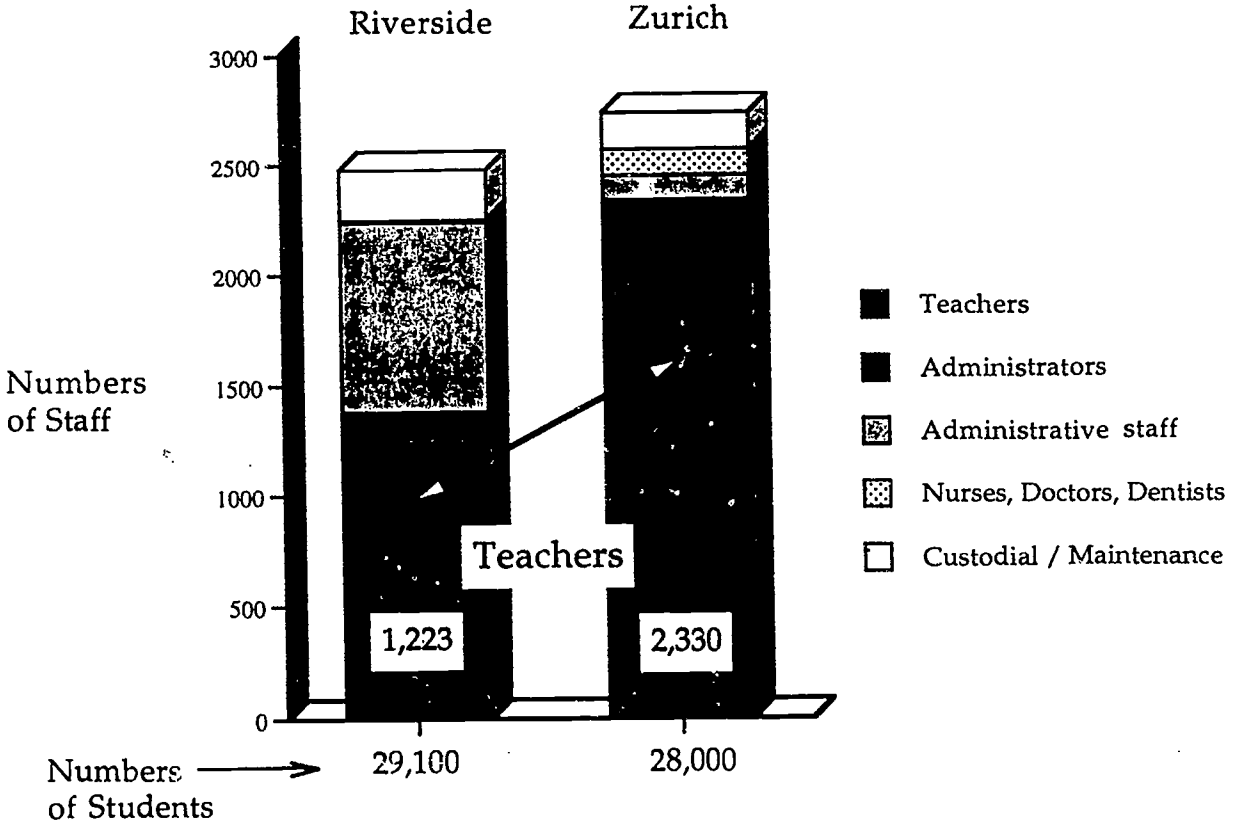
The American decision, made over a century ago when current school bureaucracies were conceived, to invest in large, highly specialized school organizations managed through hierarchical decisionmaking may have led to a system that uses resources inefficiently. Overall, our system has invested much more in creating a highly bureaucratized and regulated system than in recruiting and preparing good teachers. It may be that solving the problems of teacher development will require different ways for structuring education and teaching work.

Teaching and Teacher Development Abroad

In contrast to the traditions of U.S. education, other countries have structured teachers' preparation, responsibilities, and ongoing professional development much differently. Based on greater investments in teachers' knowledge and abilities, many countries tend to hire fewer administrative staff and specialists and more teachers who take on a broader range of decisionmaking responsibilities. As a consequence of these hiring patterns, teachers

FIGURE 6

Comparison of Two School Systems:
Riverside, California and Zurich, Switzerland

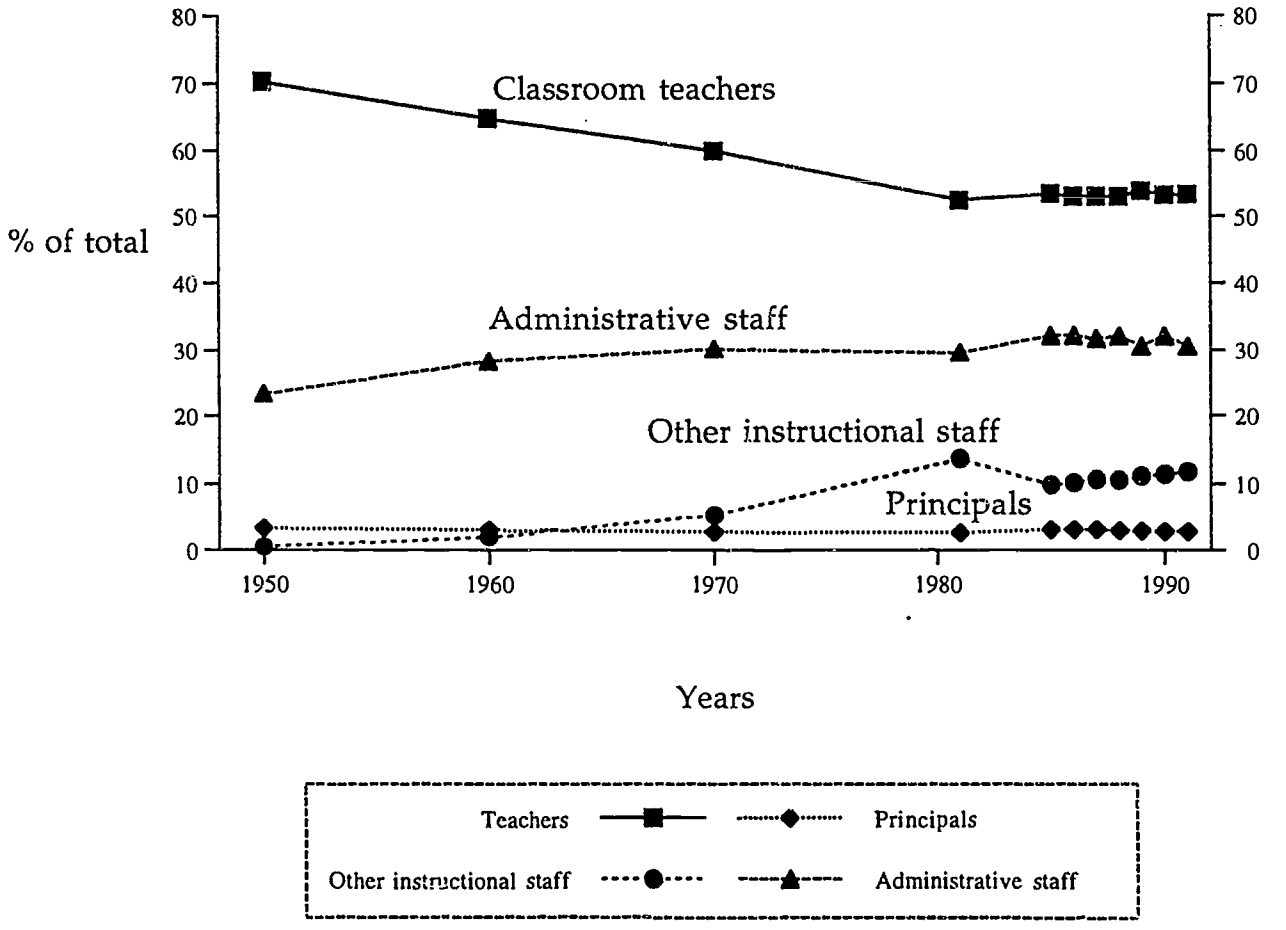


	Riverside, CA	Zurich, Swiz.
Instructional Budget	$130,000,000	$118,500,000
Expenditure/student	$4,465	$4,108
# of School Sites	37	138
# of pupils per school	786	138
Teachers	1,223	2.330
Pupil to Teacher Ratio	24:1	12:1
Administrators	142	0
Administrative staff	863	113
Custodial/Maintenance	228	167

Source: Richard Williams, Professor, UCLA, 5-16-90

FIGURE 7

Types of Full-Time Equivalent Staff as a Percentage of Total Staff



Source: U. S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*, Common Core of Data, and unpublished estimates, *Digest of Education Statistics, 1992*, tables 78 and 3. Published in *The Condition of Education / 1993*.

also have more time during each week for professional development activities, work with colleagues, and meetings with parents and individual students.

The logic of these systems is that the greater preparation and inservice support teachers receive helps assure that they can make good decisions about curriculum, teaching, and assessment without legions of curriculum writers and inspectors to prescribe and supervise their work. In some parts of Germany, for example, prospective teachers earn the equivalent of academic majors (sometimes even master's degrees) in at least two disciplines prior to undertaking two additional years of rigorous teacher preparation which combine pedagogical seminars with classroom-based observation and intensively supervised practice teaching.[57] For German elementary school teachers, a five-year program of preparation is required, most of which is spent on the study of teaching and learning; for secondary teachers, a six-year program is required.[58] Preparation in Luxembourg is a seven-year process, including and extending beyond the baccalaureate degree to professional training.[59] In France, new models of teacher education send candidates through a five-year program of undergraduate studies and teacher education leading up to an intensively supervised year-long internship in schools much like the newly-launched (but not yet widespread) professional development schools in the U.S. In these countries, teachers are almost never hired without full preparation, a practice enabled by subsidies that underwrite teacher preparation and salaries comparable to those in other professions.

A recent cross-national study reports that most countries who are members of the Organization for Economic Cooperation and Development are extending preservice education requirements and internships, while also seeking to deepen inservice learning opportunities.[60] The same is true of Asian countries: Australia, Japan, Chinese Taipei, and New Zealand are moving toward five-year programs of teacher preparation, usually including greater study of teaching and learning and a sustained and intensive internship or practicum component.[61]

In Japan, where inservice professional development opportunities are extensive, teachers spend between 15 and 20 hours per week with their classrooms of students, and the remaining time working with colleagues on developing lessons, visiting parents, counseling students, and pursuing research, study groups, and other learning activities. Regular opportunities are provided for visitations to other schools, half- and full-day seminars provided by teachers, group research projects, ongoing teacher-led study groups in various subject areas, joint planning, and demonstration lessons, which teachers regularly offer to one another. About 5,000 teachers annually are subsidized to visit schools in other countries to look at teaching.[62]

By Japanese law, beginning teachers must receive at least 20 days of inservice training during their first year on the job and 90 days of professional development. Master teachers are released from their classrooms to advise and counsel them.[63] In Taiwan, candidates pursue a four-year undergraduate degree which includes an extensive set of courses on child learning, development, and pedagogy prior to a full-year teaching practicum

in a carefully selected and supervised setting. In the People's Republic of China, beginning teachers start out after their teacher preparation as apprentices, working with a reduced teaching load, observing other teachers and preparing under the supervision of master teachers. They work in teaching teams for planning lessons and peer observation.[64] There are ongoing supports for collegial learning.

Of their study of mathematics teaching and learning in Japan, Taiwan, and the U.S., Stigler and Stevenson (1991) note:

> (One of the) reasons Asian class lessons are so well crafted is that there is a very systematic effort to pass on the accumulated wisdom of teaching practice to each new generation of teachers and to keep perfecting that practice by providing teachers the opportunities to continually learn from each other (p. 46).

Finally, in addition to these ongoing opportunities for professional learning, teaching in most other countries is not as bureaucratically organized as it is in the U.S., either within the teaching force or in terms of specialists and administrators who do not teach. It is not uncommon, for example, in Germany, Japan, Switzerland, and Sweden, for teachers to teach multiple subjects, take on counseling responsibilities, and teach the same students for multiple years, so that they come to know their students well both academically and personally.[65] Where similar arrangements for personalizing teacher-student relationships have been tried in the U.S., research shows that student achievement is significantly higher, as a consequence of teachers' greater knowledge of students' learning styles and needs, and greater ability to activate student motivation and effort.[66]

Possibilities for Transforming Teaching

Ultimately, the quality of teaching depends not only on the qualities and qualifications of individuals who enter and stay, but also on how workplace factors and school structures affect teaching work and teachers' effectiveness. Teachers who feel they are enabled to succeed with students are more committed and effective than those who feel unsupported in their learning and in their practice.[67]

Interestingly, structural workplace conditions having to do with autonomy, decision-making authority, and administrative supports appear to exert more influence over most teachers' views of teaching than such factors as student behavior, often trumpeted by the media as the major problem in schools. Though the stresses of contemporary life, particularly in urban communities, should not be minimized as an influence on students, families, and schools, teachers do not view student behavior, absenteeism, or drug abuse as the most overwhelming difficulty in their work, even in central cities. In 1991, no more than 14% of teachers felt that any of these were serious problems in their schools.[68] However, large numbers of teachers (25 to 40%) are dissatisfied with working conditions having to do with

how schools are structured and managed and with the control they have over their professional lives.[69] Teachers who leave the profession permanently are often those who are most dissatisfied with these kinds of workplace conditions.[70]

While U.S. teachers typically report that they do not have the time and resources to do their work, that they have too few opportunities to interact with colleagues and little influence on school policies and practices, those in restructuring school environments feel differently. A recent survey of teachers regarding the extent and effects of recent school reforms illustrates how professional working conditions affect teachers' attitudes about their work as well as their practices.[71] Those who reported that site-based management (SBM) had been introduced in their schools (about 50% of the total), were also much more likely to report that a whole series of other curriculum and organizational reforms had occurred. For example, 72% of teachers in SBM schools said that cooperative learning had had a major impact on their school, as compared to only 35% of those teachers in non-SBM schools. Also, more prevalent in SBM schools were mixed ability-group classrooms, more rigorous graduation standards, performance-based assessment practices, emphasis on indepth understanding rather than superficial content coverage, accelerated learning approaches, connections between classroom practices and home experiences and cultures of students, and teacher involvement in decisions over how school funds are spent.[72]

These kinds of changes in governance seem to be associated with other changes that provide teachers with the teaching circumstances they need to feel effective. Teachers in schools that had been impacted by reform were much more likely to report that their schools had become much better in the previous three years at providing structured time for teachers to work with each other on professional matters, enabling them to observe each other in the classroom and provide feedback about their teaching, allowing teachers to work in teams, giving teachers more time to plan instruction, and being willing to counsel students in home visits.

These changes appear to affect teachers' views of their work. Teachers in reform-impacted schools felt they had more opportunity to adapt their instruction to the needs of their students and to invent more effective methods, rather than being constrained by district routines or standardized curricula. They were more optimistic about principal-teacher relationships, about working conditions for teachers, about the educational performance of students, about the professional status of teachers, and about their own job satisfaction. They were much more likely to report themselves very satisfied with their career as a teacher (61% as compared to 44%) and to see teachers as the agents of reform rather than as the targets of reform.[73]

In addition to these school-based reforms, important initiatives are currently underway to develop and implement more meaningful standards for teaching, including the move toward performance-based standards for teacher licensing, companion efforts to develop more sophisticated and authentic assessments for teachers, and the development and integration of national standards for teacher education, licensing, and certification. These national efforts

are being led by the new National Board for Professional Teaching Standards (NBPTS), established in 1987 as the first professional body in teaching to set standards for the advanced certification of accomplished teachers; by the Interstate New Teacher Assessment and Support Consortium (INTASC), a consortium of more than 30 states working together on "National Board-compatible" licensing standards and assessments; and by the National Council for Accreditation of Teacher Education (NCATE), which has been strengthening standards for teacher education programs, recently incorporating the performance standards developed by INTASC.

These initiatives have in common a view of teaching as complex, grounded in decisions that are contingent on students' needs and instructional goals, and reciprocal -- that is, continually shaped and reshaped by students' responses to learning events. This view contrasts with that of the recent "technicist" era of teacher training and evaluation, in which teaching was seen as the implementation of set routines and formulas for behavior, which were standardized and disconnected from the diverse needs and responses of students. The new standards and assessments also take into explicit account the multicultural, multilingual nature of a student body that also possesses multiple intelligences and approaches to learning. The standards explicitly view teaching as collegial work, informed by collective planning and problem solving and by continual reflection on practice with colleagues.

Developing a New Paradigm for School Reform

Regulations do not transform schools; only teachers, in collaboration with administrators and parents, can do that. Thus, rebuilding the human infrastructure of the educational system through strategic investment in the recruitment, preparation, induction, and ongoing learning of teachers is a key strategy for school reform. The attempts presently underway across the country still tend to be embryonic, and are scattered rather than systemic, but the possibilities for rethinking how schools structure the use of teacher time, the opportunities for team teaching and collaboration, the development of teacher and school networks, and the responsibilities of teachers are probably greater now than they have ever been. A companion press to rethink teacher preparation, to create school-university partnerships, and to develop collaborative arrangements with business and industry has opened up an array of options for teacher professional development. These initiatives have created an assortment of activities and commitments that are promising, and could become powerful if coordinated around a common vision and agenda for strengthening teaching.

This agenda is central to broader school reforms. Indeed, all of the problems cited by educational critics are constrained in their solution by the availability of knowledgeable and skillful teachers, and by the school conditions that define how that knowledge can be used. Raising graduation requirements in mathematics, science, and foreign language, for example, is of little use if there are not enough teachers prepared to teach those subjects well. Exhortations for improvement in students' higher order thinking abilities can accomplish little without able teachers who know how to engender such thinking and who teach in an

environment that supports rather than undermines this kind of learning. Concerns about "at-risk" children -- those who drop out, tune out, and fall behind -- cannot be addressed without teachers who are well prepared to understand and meet the diverse needs of students who come to school with varying learning styles, family situations, and beliefs about themselves and about what school means for them.

In policy terms, strengthening teaching suggests developing more rigorous preparation, licensing, and selection practices, and more effective professional development in exchange for the deregulation of teaching -- fewer rules prescribing what is to be taught, when, and how. The theory behind this equation is that such steps are more likely to improve the quality of education and the level of knowledge in the profession as a whole by promoting continual improvement, as "effectiveness" rather than "compliance" becomes the standard for judging practice. Coupled with strategies to ensure an adequate supply of well-prepared teachers, and schools that are organized to use their talents well, reforms of teaching pose an alternate paradigm. They emphasize bottom-up strategies that build knowledge and capacity within the ranks of teachers and schools, betting on people rather than on bureaucratic systems as the source of improved productivity. They seek forms of accountability that will focus attention on "doing the right things" rather than "doing things right." As such, they demand changes in much existing educational policy, in current school regulations and management structures.

Professionalizing teaching may call for rethinking school structures and roles, and reallocating educational dollars. If teachers assume many of the instructional tasks currently performed by administrative staff (e.g. curriculum development and supervision), the layers of bureaucratic hierarchy will be reduced. If teachers are more carefully selected and better trained and supported, expenditures for management systems to control incompetence will be less necessary. If investments are made in the beginning of the teaching career for induction support and pre-tenure evaluation, the costs of continually recruiting and hiring new entrants to replace the 30 to 50% who leave in the first few years will decline; the costs of band-aid approaches to staff development for those who have not learned to teach effectively will be reduced; and the costs of remediating or seeking to dismiss poor teachers -- as well as compensating for the effects of their poor teaching on children -- will decrease. Strategic investment in teacher competence should free up resources for innovation and learning.

Although these arguments may sound persuasive, it is important to realize that American education has been down this path before. The criticisms of current educational reformers -- that our schools provide most children with an education that is too rigid, too passive, and too rote-oriented to produce learners who can think critically, synthesize and transform, experiment and create -- are virtually identical to those of progressive educators at the turn of the century, in the 1930s, and again in the 1960s. What John Dewey called the "old education" in 1900, with "its passivity of attitude, its mechanical massing of children, its uniformity of curriculum and method" [74] was to be replaced with a child-centered approach that focuses on the needs and aptitudes of students. Many contemporary reforms were pursued in each of these eras: a "thinking" curriculum aimed at "higher order"

performances and cognitive skills, team teaching, cooperative learning, student-centered instruction, and authentic assessment. Indeed, with the addition of a few computers, current scenarios for 21st century schools [75] are virtually identical to John Dewey's 1900 vision of the 20th century ideal.[76]

These efforts, aimed at more universal, high quality education, were killed by underinvestment in teacher knowledge and school capacity. Cremin argued that "progressive education...demanded infinitely skilled teachers, and it failed because such teachers could not be recruited in sufficient numbers."[77] Because of this failure, in each wave of reform, learner-centered education gave way to standardizing influences that "dumbed down" the curriculum, in the efficiency movement of the 1920s, the teacher-proof curriculum reforms of the 1950s, and the "back to the basics" movement of the 1970s and '80s. Prescriptions for routine practice are the usual organizational response to presumed or actual inabilities on the part of some workers to make sound decisions on their own.

However, disappointment with the outcomes of these attempts to simplify and prescribe school procedures led in turn in each instance to renewed criticisms of schools and attempts to restructure them. Current efforts at school reform are likely to succeed to the extent that they are built on a strong foundation of teaching knowledge and are sustained by a commitment to structural rather than merely symbolic change. Major changes in the productivity of American schools are likely to rest on our ability to create and sustain a highly-prepared teaching force for all, not just some, of our children.

Notes

1. Hudson Institute, *Workforce 2000: Work and Workers for the 21st Century* (Indianapolis, IN: Author, 1987).

2. P. Drucker, *The Frontiers of Management* (New York: Harper & Row, 1986).

3. L. Darling-Hammond, "Achieving our Goals: Structural or Superficial Reforms?," *Phi Delta Kappan*, vol. 72, 1990, pp. 286-295.

4. M. Rollefson, *Teacher Supply in the United States: Sources of Newly Hired Teachers in Public and Private Schools* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1993).

5. R.F. Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal on Legislation*, vol. 28, pp. 465-498, Summer 1991.

6. Hudson Institute, 1987.

7. Educational Testing Service, *Crossroads in American Education* (Princeton: Author, 1989).

8. C. McKnight, F.J. Crosswhite, J.A. Dossey, E. Kifer, S.O. Swafford, K.J. Travers, and T.J.Cooney, *The Underachieving Curriculum: Assessing U.S. School Mathematics from an International Perspective*, (Champaign, IL: Stipes Publishing, 1987), and Ibid.

9. N. Alsalam, G.E. Fischer, L.T. Ogle, G.T. Rogers, and T.M. Smith, *The Condition of Education 1993* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1993).

10. William T. Grant Foundation, *The Forgotten Half: Non-College Youth in America* (Washington, D.C.: Author, 1988).

11. D.K. Cohen, M.W. McLaughlin, and J.E. Talbert, *Teaching for Understanding: Challenges for Policy and Practice* (San Francisco: Jossey-Bass, 1993).

12. L. Darling-Hammond, "Teacher Professionalism: Why and How?," in A.Lieberman, ed., *Schools as Collaborative Cultures: Creating the Future Now* (Philadelphia: Falmer Press, 1990), and L.S. Shulman, "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review*, vol. 57, 1987, pp.1-22.

13. A.E. Wise and L.Darling-Hammond, *Licensing Teachers, Design for a Teaching Profession* (Santa Monica, CA: RAND Corporation, 1987).

14. D.E. Gerald and W.J. Hussar, *Projections of Education Statistics to 2002* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1991).

15. National Center for Education Statistics, *Digest of Education Statistics 1990* (Washington, DC: U.S. Department of Education, 1991).

16. National Center for Education Statistics, *The Condition of Education 1989, Vol. 2* (Washington, DC: U.S. Department of Education, 1989), and American Council on Education, *Eighth Annual Status Report on Minorities in Higher Education* (Washington, DC: Author, 1989).

17. Ibid.

18. L. Gray, M. Cahalan, S. Hein, C. Litman, J.Severynse, S. Warren, G. Wisan, and P. Stowe, *New Teachers in the Job Market, 1991 Update* (Washington, DC: U.S. Department of Education, OERI, 1993).

19. L. Darling-Hammond and B. Berry, *The Evolution of Teacher Policy* (Santa Monica, CA: RAND Corporation, 1988), K.R. Howey and N.L. Zimpher, *Patterns in Prospective Teachers: Guides for Designing Preservice Programs* (Unpublished paper, Ohio State University, 1993), and Gray, et al., 1993.

20. M. Cahalan, L, Gray, J.M. Brick, J. Severynse, G. Wisan, S. Hein, C. Litman, and S. Warren, *Occupational and Educational Outcomes of Recent College Graduates 1 Year After Graduation: 1991* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1993).

21. S.P. Choy, R.R. Henke, M.N. Alt, E.A. Medrich, and S.A. Bobbitt, *Schools and Staffing in the United States: A Statistical Profile, 1990-91* (Washington, DC: National Center for Education Statistics, U.S. Department of Education, 1993).

22. R.J. Murnane, J.D. Singer, J.B. Willett, J.J. Kemple, and R.J. Olsen, *Who Will Teach? Policies that Matter* (Cambridge, MA: Harvard University Press, 1991), and E.M. Sclan, "The Effect of Perceived Workplace Conditions on Beginning Teachers' Work Commitment, Career Choice Commitment, and Planned Retention," *Dissertation Abstracts International*, 54-08A, (University Microfilms No. 9400594, 1993).

23. M. Sedlak and S. Schlossman, *Who Will Teach?* (Santa Monica, CA: RAND Corporation, 1986).

24. J.N. Akin, *Teacher Supply and Demand in the United States: 1989 Report* (ASCUS Research Report. Addison, IL: Association for School, College, and University Staffing, 1989), and L.Darling-Hammond, 1990.

25. Association for School, College, and University Staffing, *Teacher Supply and Demand* (Addison, IL: Author, undated).

26. New York State Education Department, undated memorandum.

27. G. W. Haggstrom, L. Darling-Hammond, and D. W. Grissmer, *Assessing Teacher Supply and Demand* (Santa Monica, CA: RAND Corporation, 1988), and D.W. Grissmer and S.N. Kirby, *Teacher Attrition: The Uphill Climb to Staff the Nation's Schools* (Santa Monica, CA: RAND Corporation, 1987).

28. Darling-Hammond, 1990, and Grissmer and Kirby, 1987.

29. R.J. Murnane and R.J. Olsen, *Factors Affecting Length of Stay in Teaching* (Paper presented at the annual meeting of the American Education Research Association, New Orleans, 1988).

30. M.A. Smylie, "Redesigning teachers' work: Connections to the classroom," in L. Darling-Hammond, ed., *Review of Research in Education, 20* (Alexandria, VA: Association of Supervision and Curriculum Development, 1994), and L.Darling-Hammond, ed., *Professional Development Schools: Schools for Developing a Profession* (New York: Teachers College Press, 1994).

31. V. Cobb, "Accreditation in Teacher Education," *Dissertation Abstracts International*, 54-12A (University Microfilms No. 9414422, 1993), R.J. Coley and M.E. Goertz, *Educational Standards in the 50 States: 1990* (Princeton, NJ: Educational Testing Service, 1990), and L. Darling-Hammond, "Teacher Quality and Educational Equality," *The College Board Review*, vol.148, pp. 16-23, 39-41, Summer, 1988.

32. Gray, et al., 1993.

33. Ibid.

34. C. McKnight, F.J. Crosswhite, J.A. Dossey, E. Kifer, S.O. Swafford, K.J. Travers, and T.J.Cooney, *The Underachieving Curriculum: Assessing U.S. School Mathematics from an International Perspective* (Champaign, IL: Stipes Publishing, 1987).

35. W. Aldridge, "What's Being Taught and Who's Teaching It?," in *This Year in School Science: The 1986 Science Curriculum*, pp. 207-224 (Washington, DC: American Association for the Advancement of Science, 1987).

36. McKnight, et al., 1987.

37. Choy, Henke, et al., 1993.

38. Ibid.

39. J. Oakes, *Multiplying Inequalities: The Unequal Distribution of Mathematics and Science Opportunities* (Santa Monica, CA: RAND Corporation, 1990).

40. California Commission on the Teaching Profession, *Who Will Teach our Children?* (Sacramento, CA: Author, 1985).

41. L. Darling-Hammond, "Teaching and Knowledge: Policy Issues Posed by Alternate Certification for Teachers," *Peabody Journal of Education*, vol. 67, pp. 123-154, 1992.

42. Ferguson, 1991.

43. S.P. Choy, S.A. Bobbitt, R.R. Henke, E.A. Medrich, L.J.Horn, and J. Lieberman, *America's Teachers: Profile of a Profession* (Washington, DC: National Center on Education Statistics, U.S. Department of Education, 1993), L. Darling-Hammond, "Teachers and Teaching: Signs of a Changing Profession," in R. Houston, M. Haberman, and J. Sikula, eds., *Handbook of Research on Teacher Education*, pp. 267-290 (New York: Macmillan, 1990), Haggstrom, Darling-Hammond, & Grissmer, 1987, and Gray et al., 1993.

44. American Association of Colleges for Teacher Education, *RATE IV, Teaching Teachers: Facts and Figures* (Washington, DC: Author, 1991).

45. A.E. Wise, L. Darling-Hammond, and B. Berry, *Effective Teacher Selection, From Recruitment to Retention* (Santa Monica, CA: RAND Corporation, 1987).

46. Gray, et al., 1993.

47. Darling-Hammond, 1994.

48. H. Ebmeier, S.Twombly, and D. Teeter, "The Comparability and Adequacy of Financial Support for Schools of Education," *Journal of Teacher Education*, vol. 42, pp. 226-235, 1990, and G. Sykes, "Teacher Education in the United States," in B. R. Clark, ed., *The School and the University*, pp. 264-289 (Los Angeles, CA: University of California, 1985).

49. National Education Association, *Status of the American Public School Teacher, 1990-91* (Washington, DC: Author, 1992).

50. F.H. Nelson and T. O'Brien, *How U.S. Teachers Measure up Internationally: A Comparative Study of Teacher Pay, Training, and Conditions of Service* (Washington, DC: American Federation of Teachers, 1993), and L. Darling-Hammond, "Teachers and Teaching: Signs of a Changing Profession," in R. Houston, M. Haberman, and J. Sikula, eds., *Handbook of Research on Teacher Education*, pp. 267-290 (New York, Macmillan, 1990).

51. NEA, 1992.

52. Choy, Bobbitt, et al., 1993.

53. Organization for Economic Cooperation and Development, *Education at a Glance, OECD Indicators* (Paris: Author, 1992).

54. Richard Williams, Professor, UCLA, 1990.

55. U.S. Department of Labor, "Current Population Survey, 1986-87" (Unpublished data, 1986).

56. Alsalam, et al., 1993

57. B. Burns, P. Hinkle, R. Marshall, C.S. Manegold, F. Chideya, T. Waldrop, D. Foote, and D. Pedersen, "The Best Schools in the World," *Newsweek*, pp. 50-64, December 2, 1991.

58. Organization for Economic Cooperation and Development, *The Training of Teachers* (Paris: Author, 1990), and R.K. Kolstad, D.R. Coker, and C. Edelhoff, "Teacher Education in Germany: An Alternative Model for the United States," The Clearing House, pp. 233-234, 19 .

59. OECD, 1990.

60. Ibid.

61. V.L. Cobb, L. Darling-Hammond, K. Murangi, and J. Ley-King, *A Comparative Study of Teacher Training and Professional Development in APEC Members: Analytic Overview* (Washington, DC: U.S. Department of Education, forthcoming).

62. W. D. Hawley, *The Education of Japanese Teachers: Lessons for the United States?* (ERIC Document Reproduction Service No. ED 280 830, 1986), and N. Sato and M.W. McLaughlin, "Context Matters: Teaching in Japan and in the United States," *Phi Delta Kappan*, vol. 73, pp.359-366, 1992.

63. J.W. Stigler, and H.W. Stevenson, "How Asian Teachers Polish Each Lesson to Perfection," *American Educator*, pp.12-47, Spring, 1991, and OECD, 1990.

64. L.W. Paine, "The Teacher as Virtuoso: A Chinese Model for Teaching," *Teachers College Record*, vol. 92, pp. 49-81, 1990.

65. N.K. Shimahara, "Japanese Education and its Implications for U.S. Education," *Phi Delta Kappan*, vol. 66, pp. 418-421, 1985, and OECD, 1990.

66. National Institute of Education, *Violent Schools -- Safe Schools: The Safe School Study Report to Congress* (Washington, DC: Author, 1977), and G.D. Gottfredson and D.C. Daiger, *Disruption in Six Hundred Schools* (Baltimore, MD: The Johns Hopkins University, Center for Social Organization of Schools, 1979).

67. Haggstrom, Darling-Hammond, & Grissmer, 1988, M. W. McLaughlin and J.E. Talbert, "New Visions of Teaching," in D.K. Cohen, M.W. Mclaughlin, and J.E. Talbert, eds., *Teaching for Understanding: Challenges for Policy and Practice* (San Francisco: Jossey-Bass, 1993), and S. Rosenholtz, *Teacher's Workplace: The Social Organization of Schools* (New York: Longman, 1989).

68. Choy, Henke, et al., 1993.

69. Choy, Bobbitt, et al., 1993, and Ibid.

70. L. Darling-Hammond, *Beyond the Commission Reports: The Coming Crisis in Teaching* (Santa Monica, CA: RAND Corporation, 1984), and Choy, Bobbitt, et al., 1993.

71. LH Research, *A Survey of the Perspective of Elementary and Secondary School Teachers on Reform* (Prepared for the Ford Foundation. New York: Author, 1993).

72. Ibid.

73. Ibid.

74. J. Dewey, *The School and Society* (1900; reprint, Chicago: University of Chicago Press, 1968).

75. Carnegie Forum on Education and the Economy, *A Nation Prepared: Teachers for the 21st Century* (New York: Author, 1986).

76. Dewey, 1968 [1900].

77. L.A. Cremin, *The Genius of American Education* (New York: Vintage Books, 1965).