

# HOW TEACHER EDUCATION MATTERS

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*Despite longstanding criticisms of teacher education, the weight of substantial evidence indicates that teachers who have had more preparation for teaching are more confident and successful with students than those who have had little or none. Recent evidence also indicates that reforms of teacher education creating more tightly integrated programs with extended clinical preparation interwoven with coursework on learning and teaching produce teachers who are both more effective and more likely to enter and stay in teaching. An important contribution of teacher education is its development of teachers' abilities to examine teaching from the perspective of learners who bring diverse experiences and frames of reference to the classroom.*

Over the past decade, public dissatisfaction with schools has included dissatisfaction with teacher education. Education schools have been variously criticized as ineffective in preparing teachers for their work, unresponsive to new demands, remote from practice, and barriers to the recruitment of bright college students into teaching. In more than 40 states, policy makers have enacted alternate routes to teacher certification to create pathways into teaching other than those provided by traditional 4-year undergraduate teacher education programs. Whereas some of these are carefully structured postbaccalaureate programs, others are little more than emergency hiring options. Upon his election in 1988, President Bush's only education proposal was the encouragement of alternative teacher certification. In 1995, Newt Gingrich proposed the elimination of teacher certification rules as his major education initiative. In 1999, Chester Finn and the Thomas B. Fordham Foundation issued a manifesto arguing against teacher education requirements as a "barrier" to entering teaching.

Voices of dissatisfaction have been raised from within the profession as well (Goodlad, 1990; Holmes Group, 1986). These voices, however, have urged the redesign of teacher educa-

tion to strengthen its knowledge base, its connections to both practice and theory, and its capacity to support the development of powerful teaching. Proposals at the far ends of this continuum stand in stark contrast to one another. One approach would replace university-based preparation with on-the-job training that focuses on the pragmatics of teaching, whereas the other would expand professional training to prepare teachers for more adaptive, knowledge-based practice, while simultaneously tackling the redesign of schools and teaching. Which of these routes holds the most promise? What are the implications for teachers' capacities, and, most important, for the education of children?

Although the debates on these questions have been largely ideological, there is a growing body of empirical evidence about the outcomes of different approaches to teacher education and recruitment. This research suggests that the extent and quality of teacher education matter for teachers' effectiveness, perhaps now even more than before. The expectations that schools teach a much more diverse group of students to much higher standards create much greater demands on teachers. Teaching for problem solving, invention, and application of knowl-



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edge requires teachers with deep and flexible knowledge of subject matter who understand how to represent ideas in powerful ways can organize a productive learning process for students who start with different levels and kinds of prior knowledge, assess how and what students are learning, and adapt instruction to different learning approaches.

### **DO EDUCATION SCHOOLS HELP TEACHERS LEARN?**

Even if one agrees that there are desirable knowledge and skills for teaching, many people believe that anyone can teach, or, at least, that knowing a subject is enough to allow one to teach it well. Others believe that teaching is best learned, to the extent that it can be learned at all, by trial and error on the job. The evidence strongly suggests otherwise. Reviews of research over the past 30 years have concluded that even with the shortcomings of current teacher education and licensing, fully prepared and certified teachers are generally better rated and more successful with students than teachers without this preparation (Ashton & Crocker, 1986; Evertson, Hawley, & Zlotnik, 1985; Greenberg, 1983; Haberman, 1984; Olsen, 1985).

In fields ranging from mathematics and science to vocational education, reading, elementary education, and early childhood education, researchers have found that teachers who have greater knowledge of teaching and learning are more highly rated and are more effective with students, especially at tasks requiring higher order thinking and problem solving. (For a review of this literature, see Darling-Hammond, 1999b). Interestingly, whereas subject-matter knowledge is often found to be an important factor in teaching effectiveness, it appears that its relationship to teaching performance is curvilinear; that is, it exerts a positive effect up to a threshold level and then tapers off in influence. Furthermore, measures of pedagogical knowledge, including knowledge of learning, teaching methods, and curriculum, are more frequently found to influence teaching performance and often exert even stronger effects than subject-matter knowledge (Ashton & Crocker,

1986; Begle & Geeslin, 1972; Byrne, 1983; Evertson et al., 1985; Ferguson & Womack, 1993; Guyton & Farokhi, 1987; Monk, 1994; Perkes, 1967-1968). It seems logical that pedagogical skill would interact with subject matter knowledge to bolster or undermine teacher performance. As Byrne (1983) suggests,

insofar as a teacher's knowledge provides the basis for his or her effectiveness, the most relevant knowledge will be that which concerns the particular topic being taught and the relevant pedagogical strategies for teaching it to the particular types of pupils to whom it will be taught. (p. 14)

Meanwhile, studies of teachers admitted with less than full preparation find that recruits tend to be less satisfied with their training and have greater difficulties planning curriculum, teaching, managing the classroom, and diagnosing students' learning needs. They are less able to adapt their instruction to promote student learning and less likely to see it as their job to do so, blaming students if their teaching is not effective. Principals and colleagues rate these teachers less highly on their instructional skills, and they leave teaching at higher-than-average rates. Most important is that their students learn less, especially in areas such as reading, writing, and mathematics, which are critical to later school success (Darling-Hammond, 1999b).

Illustrating these findings, Gomez and Grobe's (1990) study of the performance of alternate certification (AC) candidates in Dallas, who receive a few weeks of summer training before they assume full teaching responsibilities, found that their performance was much more uneven than that of traditionally trained entrants who had equivalent scores on the state's subject matter exams. From 2 to 16 times as many AC recruits were rated "poor" on each teaching factor evaluated, and their students' showed significantly lower achievement gains in language arts and writing.

Perhaps it is not surprising that alternate route teachers from short-term programs report less satisfaction with their preparation and less commitment to remaining in teaching than other recruits (Darling-Hammond, Hudson, & Kirby, 1989; Lutz & Hutton, 1989). Problems resulting from inadequate preparation

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headed the list of complaints of the 20% of Los Angeles AC candidates who quit before they completed their summer training programs in 1984 and 1985, as well as many of those who remained but voiced dissatisfaction (Wright, McKibbin, & Walton, 1987). Stoddart's (1992) analysis reveals that 53% of these recruits had left teaching within the first 6 years of program operation. Among AC candidates in Dallas, only half successfully "graduated" to become full-fledged teachers after their first year as interns. Only 40% said that they planned to stay in teaching, as compared to 72% of traditionally trained recruits (Lutz & Hutton, 1989).

Even very intelligent people who are enthusiastic about teaching find that they cannot easily succeed without preparation, especially if they are assigned to work with children who most need skillful teaching. The best-publicized program founded on this idea is Teach for America (TFA), created to recruit bright college graduates to disadvantaged schools en route to careers in other professions. If anyone could prove the claim that teachers are born and not made, these bright eager students might have been the ones to do it. Yet, four separate evaluations found that TFA's 3-to-8-week summer training program did not prepare candidates adequately (Grady, Collins, & Grady, 1991; Popkewitz, 1995; Roth, 1993; Texas Education Agency, 1993), despite the intelligence and enthusiasm of many of the recruits. Many recruits knew that their success—and that of their students—had been compromised by their lack of access to the knowledge needed to teach. Yale University graduate Schorr (1993) was one of many to raise this concern:

I—perhaps like most TFAers—harbored dreams of liberating my students from public school mediocrity and offering them as good an education as I had received. But I was not ready. . . . As bad as it was for me, it was worse for the students. Many of mine . . . took long steps on the path toward dropping out. . . . I was not a successful teacher and the loss to the students was real and large. (pp. 317-318)

These feelings contribute to the program's high attrition rate. Even though many recruits report that they initially entered the program with the intention of exploring teaching as a career,

many also indicate that they left in discouragement because they felt unsuccessful. TFA statistics show that of those who started in 1990, 58% had left before the third year, a 2-year attrition rate nearly three times the national average for new teachers. The Maryland State Department of Education found that 62% of corps members who started in Baltimore in 1992 left within 2 years.

Aside from high attrition, studies of short-term alternative programs have also noted that what little pedagogical training they provide tends to focus on generic teaching skills rather than subject-specific pedagogy, on singular techniques rather than a range of methods, and on specific, immediate advice rather than research or theory (Bliss, 1992; Stoddart, 1992; Zumwalt, 1990).

The lack of traditional coursework and student teaching in these programs are generally supposed to be compensated for by intensive mentoring and supervision in the initial months of full-time teaching. Ironically, however, most studies have found that promised mentors did not often materialize (Darling-Hammond, 1992).

Unfortunately, the least well-prepared recruits are disproportionately assigned to teach the least advantaged students in high-minority and low-income schools (National Commission on Teaching and America's Future [NCTAF], 1996). In the aggregate, this can make a substantial difference in what children learn. Recent multivariate studies of student achievement at the school and district level have found a substantial influence of teachers' qualifications on what students learn. Ferguson's (1991) analysis of Texas school districts found that teachers' expertise, including their scores on a licensing examination measuring basic skills and teaching knowledge; master's degrees; and experience accounted for more of the interdistrict variation in students' reading and mathematics achievement in Grades 1 through 11 than student socioeconomic status. The effects were so strong, and the variations in teacher expertise so great, that after controlling for socioeconomic status, the large disparities in achievement between Black and White students were almost

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entirely accounted for by differences in the qualifications of their teachers. This finding contravenes the common presumption that students' school achievement is largely a function of their socioeconomic status and that school variables make little difference in educational outcomes.

A more recent Texas study (Fuller, 1999) found that students in districts with greater proportions of fully licensed teachers were significantly more likely to pass the Texas state achievement tests after controlling for student socioeconomic status, school wealth, and teacher experience. Similar to this, a North Carolina study (Strauss & Sawyer, 1986) found that teachers' average scores on the National Teacher Examinations measuring subject matter and teaching knowledge had a large effect on students' pass rates on the state competency examinations. A 1% increase in teacher quality (as measured by NTE scores) was associated with a 3% to 5% decline in the percentage of students failing the exam.

A recent school-level analysis of mathematics test performance in California high schools (Fetler, 1999) found a strong negative relationship between average student scores and the percentage of teachers on emergency certificates, after controlling for student poverty rates. Another California study found that across all income levels, elementary students' reading achievement is strongly related to the proportions of fully trained and certified teachers (Los Angeles County Office of Education, 1999), much more so than to the proportion of beginners in the school. The study concluded that "this supports the finding that differing test scores are a teacher training issue and not merely due to new teachers' lack of classroom experience."

## RESPONSES TO CRITIQUES OF TRADITIONAL TEACHER EDUCATION

Lest schools of education become sanguine, however, there are grounds for concern about traditional preparation programs as well. The often-repeated critiques of traditional teacher education programs include the pressure of

inadequate time within a 4-year undergraduate degree, which makes it hard to learn enough about both subject matter and pedagogy; the fragmentation of content and pedagogical coursework and the divide between university- and school-based training; the weak content of many courses that pass on folklore instead of systematically developed knowledge; the lack of adequate clinical training; and the lack of resources in many education programs that serve as "cash cows" for their universities, which perpetuates much of the above.

Over the past decade, many schools of education and school districts have begun to change these conditions. Stimulated by the efforts of the Holmes Group and the National Network for Educational Renewal, more than 300 schools of education have created programs that extend beyond the confines of the traditional 4-year bachelor's degree program, thus allowing more extensive study of the disciplines to be taught along with education coursework that is integrated with more extensive clinical training in schools. Some are 1- or 2-year graduate programs that serve recent graduates or midcareer recruits. Others are 5-year models that allow an extended program of preparation for prospective teachers who enter teacher education during their undergraduate years. In either case, because the 5th year allows students to devote their energies exclusively to the task of preparing to teach, such programs allow for year-long school-based clinical experiences that are woven together with coursework on learning and teaching.

Many of these programs have joined with local school districts to create professional development schools where novices' clinical preparation can be more purposefully structured. Like teaching hospitals in medicine, these schools aim to provide sites for state-of-the-art practice that are also organized to support the training of new professionals, extend the professional development of veteran teachers, and sponsor collaborative research and inquiry. These approaches resemble reforms in teacher education abroad. Countries such as Germany, Belgium, France, and Luxembourg have long required from 2 to 3 years of graduate-level

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study in addition to an undergraduate degree for prospective teachers, including an intensively supervised internship in a school affiliated with the university.

A number of recent studies have found that graduates of extended programs (typically 5-year programs) are not only more satisfied with their preparation, they are viewed by their colleagues, principals, and cooperating teachers as better prepared, are as effective with students as much more experienced teachers, and are much more likely to enter and stay in teaching than their peers prepared in traditional 4-year programs (Andrew, 1990; Andrew & Schwab, 1995; Arch, 1989; Denton & Peters, 1988; Dyal, 1993; Shin, 1994). In fact, the entry and retention rates of these programs are so much higher than those of 4-year programs—which are, in turn, much higher than short-term alternative programs—that it is actually less expensive to prepare career teachers in this way once the costs of preparation, recruitment, induction, and replacement due to attrition are taken into account (Darling-Hammond, 1999a).

These new programs typically engage prospective teachers in studying research and conducting their own inquiries through cases, action research, and the development of structured portfolios about practice. They envision the professional teacher as one who learns from teaching rather than one who has finished learning how to teach, and the job of teacher education as developing the capacity to inquire sensitively and systematically into the nature of learning and the effects of teaching. This is an approach to knowledge production like the one that Dewey (1929) sought, one that aims to empower teachers with greater understanding of complex situations rather than to control them with simplistic formulas or cookie-cutter routines for teaching:

Command of scientific methods and systematized subject matter liberates individuals; it enables them to see new problems, devise new procedures, and in general, makes for diversification rather than for set uniformity. (p. 12)

This knowledge and understanding render (the teacher's) practice more intelligent, more flexible, and better adapted to deal effectively with concrete phenomena of practice. . . . Seeing more relations he sees more possibilities, more opportunities. His ability to judge being enriched, he has a wider range of alternatives to select from in dealing with individual situations. (pp. 20-21)

Dewey's notion of knowledge for teaching is one that features inquiry into problems of practice as the basis for professional judgment grounded in both theoretical and practical knowledge. If teachers investigate the effects of their teaching on students' learning, and if they study what others have learned, they come to understand teaching to be an inherently non-routine endeavor. They become sensitive to variation and more aware of what works for what purposes in what situations. Access to contingent knowledge allows them to become more thoughtful decision makers.

Training in inquiry also helps teachers learn how to look at the world from multiple perspectives, including those of students whose experiences are quite different from their own, and to use this knowledge in developing pedagogies that can reach diverse learners. Learning to reach out to students, those who are difficult to know as well as those who are easy to know, requires boundary crossing, the ability to elicit knowledge of others, and to understand it when it is offered. As Delpit (1995) notes, "We all interpret behaviors, information, and situations through our own cultural lenses; these lenses operate involuntarily, below the level of conscious awareness, making it seem that our own view is simply 'the way it is' " (p. 151). Good teachers must develop an awareness of their perspectives and how these can be enlarged to avoid a "communicentric bias" (Gordon, 1990), which limits their understanding of those whom they teach.

Developing the ability to see beyond one's own perspective, to put oneself in the shoes of the learner and to understand the meaning of that experience in terms of learning, is perhaps the most important role of universities in the preparation of teachers. One of the great flaws of the "bright person myth" of teaching is that it

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presumes that anyone can teach what he or she knows to anyone else. However, people who have never studied teaching or learning often have a very difficult time understanding how to convey material that they themselves learned effortlessly and almost subconsciously. When others do not learn merely by being told, the intuitive teacher often becomes frustrated and powerless to proceed. This frequently leads to resentment of students for not validating the untrained teacher's efforts. Furthermore, individuals who have had no powerful teacher education intervention often maintain a single cognitive and cultural perspective that makes it difficult for them to understand the experiences, perceptions, and knowledge bases that deeply influence the approaches to learning of students who are different from themselves. The capacity to understand another is not innate; it is developed through study, reflection, guided experience, and inquiry.

Among the tools teacher educators increasingly use for this purpose are inquiries that engage prospective teachers in investigating learning and the lives of learners and evaluating the many different outcomes of teaching. These include prospective teachers conducting case studies of children while studying development and learning, thus coming to better understand the children's thinking and experiences; conducting community studies that investigate local neighborhoods in ways that illuminate culture, customs, and life experiences of different groups of people; conducting investigations of student learning, like the National Board for Professional Teaching Standards' student learning commentaries that evaluate artifacts of the learning of 3 diverse students over time; assembling portfolios that use artifacts of teaching and learning to analyze the effects of practice; and pursuing problem-based inquiries that seek to identify problems of practice and understand them through action research coupled with reviews of others' research. These tools allow the application of theoretical principles to problems in specific contexts while appropriately complicating efforts to draw generalizations about practice. A small but growing body of research suggests that such strategies can help

teachers understand more deeply the many variables that influence their work. For example, in the case of cases and portfolios that require teachers to examine student learning in relation to their teaching, teachers claim that the process of engaging in such analysis ultimately enriches their ability to understand the effects of their actions and helps them better meet the needs of diverse students. (For a review of this literature, see Darling-Hammond and Snyder, in press.) One of the ways in which this occurs is through the process of trying to view teaching and classroom events from the perspectives of the students who experience them. As teachers look beyond their own actions to appreciate the understandings and experiences of their students, and evaluate these in light of their self-developed knowledge of individual learners and their professional knowledge of factors influencing development and learning, they grow wiser about the many ways in which learning and teaching interact.

A commitment to open inquiry, the enlargement of perspectives, and the crossing of boundaries are critical features of the ideal of university education. In fact, the basis of the very earliest universities was that they tried to bring together scholars from all over the known world. They sought to create ways to share diverse perspectives from various geographic areas, cultures, and disciplines as the basis for developing knowledge and finding truth. If universities are to continue to make the important contribution to the education of teachers that they can make, they need to pursue these ideals of knowledge building and truth finding by creating a genuine praxis between ideas and experiences, by honoring practice in conjunction with reflection and research, and by helping teachers reach beyond their personal boundaries to appreciate the perspectives of those whom they would teach.

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