

Changing Conceptions of Teaching and Teacher Development

By **Linda Darling-Hammond**

Linda Darling-Hammond is a professor and co-director of the National Center for Restructuring Education, Schools, and Teaching at Teachers College, Columbia University, New York City, New York. This article has been developed from presentations to the California Beginning Teacher Induction Network on August 5 & 6, 1993.

At this moment in history, a revolution is taking place in teaching, learning, and schooling in this country, and those who are preparing and inducting new teachers are at the very center of this revolution. As a society, we are reshaping the mission of education and of teaching, expecting that schools will not only offer education, but ensure learning; that teachers will not only “cover the curriculum,” but create a bridge between the needs and interests of each learner and the attainment of challenging learning goals. We expect all children, rather than only a few, to be prepared to think critically, solve problems, produce, and create. This demands that teachers have as deep a knowledge of learners and their learning as it does of subjects and teaching strategies (Darling-Hammond, 1993a).

Thus, the invention of 21st century schools that can educate all children well rests, first and foremost,

Changing Conceptions of Teaching

upon the development of a highly qualified and committed teaching force. The knowledge, skills, abilities, and commitments of teachers prepared today will shape and inform what is possible for the future generation of students. Though not yet universally recognized, the preparation, induction, and professional development of teachers is the core issue for educational reform.

Ten years ago, the idea that teacher knowledge was critical for educational improvement had little currency. There was a perception that educational reform could occur simply by creating more finely-tuned regulations to be imposed on schools. Continuing a tradition begun at the turn of the 20th century, policymakers searched for the right set of prescriptions, textbook adoptions, and curriculum directives to be packaged and mandated to guide practice. Educational reform was to be “teacher proof.” Hundreds of pieces of legislation and thousands of discrete regulations prescribing what educators should do, when, and how, were testament to this effort.

Since that time, the failure of these efforts to transform life in classrooms has become apparent (Darling-Hammond & Wise, 1985; Carnegie Task Force, 1986; Wise, 1988). In recent years, the policy community has come to understand that building the capacity of teachers is the only hope for transforming the nature of teaching and learning in schools in our country. This shift is confirmed by new initiatives among major foundations and the federal government to fund teacher development efforts, and by emerging proposals among the states to rethink teacher licensing along with preservice and inservice education (see, *e.g.*, INTASC, 1993; Darling-Hammond, Wise, & Klein, in press).

The success of this reform movement will depend on and will reflect the leadership exerted by those who shape the initial education and ongoing development of new teachers. The nation’s changing mission for schooling and teaching poses new challenges to teachers and teacher educators—challenges that will demand more intensive and imaginative approaches to educating and inducting new teachers. The profession must take the lead in restructuring teacher preparation alongside the restructuring of schools so that teachers are prepared to teach in the ways that new goals for student learning demand.

Restructuring to Connect Teaching and Learning

Over the last decade, the rhetoric of school improvement has changed from one of “school reform” to one of “school restructuring” (Darling-Hammond, 1993a; Elmore *et al.*, 1990; David, 1988). Restructuring extends beyond efforts to make the old system work better—trying to do the same things a little harder or more efficiently—to an overall rethinking of the design and structure of schools and teaching, of educational systems and the profession as a whole. This restructuring must be done in a way that personalizes schooling for students so they have strong and empowering relationships with adults, and so that school organizations are

Darling-Hammond

structured to prevent them from “falling through the cracks.” It must also occur in ways that provide a thinking curriculum for all students and a collaborative environment focused on learning and continual improvement for all adults in the school community.

One example of this kind of radical restructuring can currently be seen in the New York City public school system, the birthplace of the warehouse comprehensive high school. Restructuring there has meant replacing the large, impersonal high school, highly tracked and organized by assembly line methods, with much smaller high schools of 200-500 students. Over the last two years, 50 new small high schools have been conceived and several dozen already launched by teams of teachers, other educators, and members of community organizations who bring new ideas, long in the making, to the design of secondary education.

In these schools, students often study an interdisciplinary core curriculum and work with the same teachers or advisors over a period of several years. Parents are closely involved in the schooling process, and authentic assessments involve staff, students, and parents together in examining what students have learned. Research and experience demonstrate that these smaller, more personal schools are more effective in heightening achievement, in graduating students, in creating good personal relationships, and in providing leadership opportunities to students (Haller, 1992; Fowler, 1992; Howley & Huang, 1991; Howley, 1989; Green & Stevens, 1988; Darling-Hammond, Aness, & Falk, in press). Most importantly, these schools are more effective in allowing students to become bonded to important adults in a learning community which can play the role that other communities and families find it harder and harder to play.

As the world becomes less and less supportive for young people, it is important for schools to become more family-like and personalized in their treatment of children. One way to increase this personalization is to keep students, advisors, and teachers together for longer periods of time. In restructured high schools across the country, including but not limited to those that are members of the Coalition of Essential Schools, advisors work with groups of 10-to-15 students over a number of years. These advisors get to know the students and their families well. They call or meet with the parents many times a year and work directly and intensively with the family. This creates new relationships between adults and children, prevents students from becoming anonymous ciphers who could “fall through the cracks,” and allows teachers to come to know the minds of students well.

This model of interaction between teachers and students is also found in many European schools where teachers are engaged in working with the same group of students for several years. And where school structures allow teachers to engage in more personalized and extended work with students in the United States, achievement gains are quite substantial, along with more positive feelings toward self and school, and more positive behavior (NIE, 1977; Gottfredson & Daiger, 1979). This is because teaching involves much more than conveying subject matter to passive

Changing Conceptions of Teaching

recipients. A substantial part of effective teaching is based on knowledge of students and their experiences, their prior knowledge, and the ways in which they learn.

Present school structures sacrifice the deep knowledge of students that would enable more adaptive teaching when they create depersonalized, fragmented ways of organizing students and teachers for instruction. When teachers see large numbers of students in a day for short periods of time, and then pass on those students to another teacher at the end of the semester or at the end of the year, all the knowledge they have just begun to build about those students leaves with the students without having been put to full use. There is very little time to begin to adapt teaching based on the understandings of student learning that are just beginning to be obvious around March or April, and there is no way to pass that knowledge base on to the next teacher through traditional school assessment and reporting systems. School schedules, organizational arrangements, and teaching and assessment strategies are all structured around the presumption that student thinking does not matter for teaching.

Transforming teaching and learning in American schools rests on an understanding of students—not only what they know, but also how they think. This transformation calls for building teacher capacity, so teachers are well prepared to meet student needs and supported organizationally in their efforts to do so. Teachers need to build a rich knowledge base and develop tools for accessing student thinking, for understanding students' prior knowledge and backgrounds, and for connecting to students' families and communities. If teaching fails to connect with the students, there is no learning.

Extending the time that individual teachers have with the same group of students—the number of hours in the day and week as well as the number of years of work together—enables teachers and students to tackle deeper and more complex kinds of learning activities as well as to shape those in ways that are respectful of and connected to students' interests, experiences, and prior knowledge. In addition to new ways of organizing school time, schedules, and instructional arrangements, the advent of portfolio assessment is another hopeful development, one that enables teachers to hand on to other teachers a set of rich understandings of students' learning. The portfolio can provide a knowledge base about students through careful collections of examples of the student's work that provide insights into the student's thinking and ways of learning.

The shared agenda of school restructuring and teacher preparation is in helping teachers derive those insights and make the necessary connections between students' needs and curriculum goals. Increasingly, in California as elsewhere, efforts to rethink teacher preparation and rethink schooling are underway simultaneously. Changed schools require changes in the way teachers are prepared to work together in supporting student learning.

Knowledge of Student Learning

Teacher educators, along with reformers and practitioners engaged in school restructuring, are developing a new pedagogy built on several decades of research about teaching and learning. These understandings have important implications for the preparation of teachers and for the evaluation and assessment of their performance in the classroom.

First, we now understand that students do not learn by accruing discrete bits of information that eventually add up to concepts and understanding. Instead, students, as well as adults, learn things in the context of working on and testing ideas. They construct their own knowledge based on their previous understandings and experiences and on the new experiences that they encounter. Effective learning experiences must be structured to help learners engage powerful ideas whole through direct experiences, rather than in tiny, disconnected snippets presented in decontextualized worksheets or texts. Such experiences must be structured to create bridges between the very different backgrounds of individual students and common curriculum goals, by allowing learners to bring their practical knowledge and experiences into the classroom as the basis upon which they build new understandings (Bruner, 1966; Brown, Collins, & Duguid, 1989; Resnick, 1987).

Second, we understand as well that there is no single way to learn. Students have multiple intelligences, diverse approaches to learning, and different cultural experiences, talents, and interests that they bring to their learning. They learn most effectively when they build on their areas of strength rather than on modes of performance that are less well-developed. This diversity demands a pedagogy in which teachers use a variety of approaches to tap into students' abilities. It demands that teachers understand how their students think as well as what they know (Gardner & Hatch, 1989; Kornhaber & Gardner, 1993; Darling-Hammond & Aness, in press).

Teachers who are able to teach in this way understand that teaching is not talking and learning is not listening. Such teachers find ways to get students engaged in inquiry; they get their students talking about what they are thinking and how they are understanding and interpreting what they learn. When the teacher understands what students are bringing to a learning experience, she can meet them with carefully crafted opportunities that extend their understanding. This demands a different pedagogy in the classroom than one in which the teacher is the information transmitter and students are passive receptacles. This more complex approach to teaching requires not only that teachers have a deep knowledge of subject matter and a wide repertoire of teaching strategies, but also that they have intimate knowledge of students' growth, experience, learning styles, and development.

This understanding of learners and learning, I would argue, is the most neglected aspect of teacher preparation in this country. Licensing and preparation have focused more on subject matter knowledge and methods than on a strong

Changing Conceptions of Teaching

theoretical and empirical understanding of students and their learning. This is especially true for secondary school teachers who are rarely given access to knowledge about how students learn, develop, think, and perform. Teachers are rarely prepared to critically evaluate students' progress and learning in light of knowledge about cognitive, social, physical, and psychological development, multiple intelligences, and diverse performance modes; to develop curriculum grounded in a deep understanding of learning theory and learning differences; or to create assessments that can reveal student strengths, needs, and understandings. Giving teachers access to such knowledge is a major part of the transformation of teacher preparation and licensing that is on the horizon.

These efforts to deepen teachers' knowledge are one outgrowth of reformers' efforts to encourage attention to higher order thinking and performance skills. Teaching students to think critically and develop complex performance abilities cannot be managed through a "teacher-proof" approach to curriculum. Lower order skills and rote procedural knowledge may be represented in sequenced and age-graded worksheets, basal readers, texts, and curriculum packages that can be used as crutches for rote approaches to teaching. If the goal is memorization and recall on multiple choice or short answer tests, rather than a deeper understanding and application of knowledge, such teacher-proof materials can be used with some degree of success. But students cannot learn from these kinds of teaching materials and approaches how to frame and solve problems, how to communicate important and complex ideas, or how to apply what they know in novel situations.

In fact, it turns out that when students learn to acquire bits of information through an information transmittal mode, they remember only a tiny proportion of the information several months or years later. Furthermore, they are unable to transfer the learning to other kinds of situations or use it effectively for problem solving. When students have opportunities to inquire and act on their knowledge, to frame and solve problems, the amount that they learn and their flexibility in using that understanding later is substantially greater (Good & Brophy, 1986).

This kind of meaningful learning requires engaging students in inquiry, discovery, and hands-on problem solving. The teacher functions as a coach, a guide, a facilitator, and a questioner, as well as an information transmitter. This kind of teaching and learning requires longer stretches of time for working through questions and tough problems; it is more taxing and demanding of both students and teachers; it requires that teachers have greater command of both content and pedagogy in order to guide and manage students' learning.

Teaching for understanding requires much more than a seven-step lesson plan, flawlessly delivered, a formulaic collection of techniques and routines. Research on the outcomes of such formulaic approaches to teaching demonstrates that they have dysfunctional consequences for learning because they assume that students are both passive and standardized—assumptions that are fundamentally flawed. The assumption that teaching is merely the implementation of standardized practices

undermines teacher effectiveness and leads to dysfunctional policies for preparing and evaluating teachers (Darling-Hammond with Sclan, 1992).

Expectations for Teacher Performance

These new understandings about student learning and the kind of teaching required to facilitate such learning are currently at odds with many widely-used strategies for teacher evaluation and for the management of instruction that have been adopted in school districts across this country. The redesign of teacher education and of schooling must explicitly address these tensions, transforming policies in concert with practices.

For example, the Florida performance measurement system for beginning teacher evaluation, which is used in a number of other states and many districts as well, tallies certain kinds of standardized teacher behaviors. These tallies ignore and sometimes actually conflict with research on teaching and learning, including the need to connect new ideas to learners' own experiences. Teachers in the Florida system are downgraded for asking questions that draw on students' personal knowledge and experiences because, the rating manual says, while this is sometimes necessary, it slows the pace of the lesson, which is conceived as information transmittal rather than the development of understanding (Darling-Hammond with Sclan, 1992; Macmillan & Pendlebury, 1985).

Teachers who are trained to teach to performance evaluation models like this one will be unable to succeed on the new National Board for Professional Teaching Standards (NBPTS) assessments for certifying highly accomplished teachers. The NBPTS assessments, discussed more fully below, are grounded in a knowledge base about how children learn and what teaching strategies are needed to support this learning, and they require the kinds of teaching such simplistic models preclude. As the profession moves to create the conditions for learner-centered teaching, it will need to ferret out the outmoded and faulty assumptions about teaching and learning that are built into a variety of policies, programs, and instruments that have been developed or adopted in states and school districts.

Other examples of these counterproductive policies were evident in a study of the implementation of California's new Mathematics Framework (Peterson, 1990). In addition to lack of staff development support for learning new approaches to practice, two previously-enacted sets of policies stood most prominently in the way of teachers enacting the intentions of the framework. The first obstacle was the existing standardized testing system which is based on a conception of coverage and rote learning at odds with the kind of teaching for understanding that the framework seeks to encourage. The second was the set of expectations for teaching routines that are incompatible with teaching for understanding which many districts convey to teachers through their evaluations of teacher performance (Darling-Hammond, 1990).

Changing Conceptions of Teaching

As one teacher explained about the pressures posed by standardized tests:

Teaching for understanding is what we are supposed to be doing.... It's difficult to test, folks. That is the bottom line.... They want me to teach in a way that they can't test. Except that I'm held accountable to the test. It's a Catch 22. (Wilson, 1990, p. 318)

The same teacher raised the common concern that the kind of teaching that allows students to delve deeply and explore ideas poses trade-offs between depth and breadth of coverage. As he noted in reading a statement from the framework:

Teaching for understanding...takes longer to learn. Hey, if I were spending the time to really get these kids to learn it, I might be several pages back. (Wilson, 1990, p. 318)

Pacing schedules and the idea that coverage is more important than understanding are deeply imbued in American schools. International comparisons show that American students do as well as students in other countries on rote procedures, but do much worse in mathematics and science on applications and problem solving (McKnight *et al.*, 1987). One reason is the American curricular and testing focus on rapid, superficial coverage of material and then the subsequent need to repeat much of what has been covered in previous years because students have failed to retain or understand it. This pedagogy of tell and drill is unlike pedagogy elsewhere that is focused on exploration of ideas. For example, Japanese students may spend an entire class period talking through a single math problem as each student explains his thinking and how he arrived at a solution. This careful, thoughtful approach develops the capacity to think and analyze rather than simply "completing" a set number of problems solved by algorithm. Howard Gardner, whose work has redefined our understanding of intelligence and performance, argues that coverage is the enemy of deep understanding (Gardner, 1991).

The other barrier for teachers' enactment of the California Mathematics Framework was the use of direct instruction models underlying teacher evaluation approaches in many districts. Teachers are often taught to use and are evaluated by models that call for a particular kind of teacher-centered lesson focused primarily on giving information, supervising guided practice, and testing recall at the end of the highly structured session. This teacher-directed lesson collides with an inquiry approach to teaching and learning in which questions posed are as important as answers given, and students' exploration rather than teacher's talk is the center of activity.

Such observations should heighten our awareness of the ways in which policies and practices intertwine and should strengthen our resolve to make both more compatible with students' learning needs. Beginning teachers experience cognitive dissonance when faced with dilemmas such as these: they are being asked to do one thing on the one hand, but to do it in a way which conflicts with something else they

are being asked to do on the other. Veteran teachers can often sort out these inconsistencies, ignoring certain things and substituting other practices in a way that makes sense to them by selectively attending to and integrating the various cues in the environment. Beginning teachers lack the experience and expertise to easily accomplish this. What beginning teachers need as they are learning to teach is a coherent set of signals about what kind of teaching and learning are valued. Policies and practices around that common set of values and expectations are needed to support a common conception of teaching and teacher knowledge throughout teacher education and the initial years of teaching.

Standards of Practice

One reason for a lack of common expectations for teacher performance is that teachers, in contrast to other professions, have not taken charge of their own standards. In other professions, organizations of professionals exist which take responsibility for the three basic missions of a profession: (1) insuring that all decisions are knowledge-based; (2) insuring that decisions are made in the best interest of clients; and (3) assuming the responsibility for defining, transmitting, and enforcing standards of practice based on that professional knowledge and on those ethical commitments.

Until very recently, there have not been clearly articulated standards of practice defined and accepted by the profession. The NBPTS was established in 1987 to accomplish this important task. It is a 63-member body, two-thirds of whom are teachers, a majority of whom are regularly engaged with students in classrooms. The NBPTS has begun to define standards of practice and is developing assessments for the certification of highly accomplished teachers. The equivalent of this task in medicine, for example, is Board certification of physicians, a step taken after initial state licensure, as a designation of advanced accomplishment recognized by the profession.

The NBPTS's standards, developed by highly-respected educators, and the accompanying assessments that are now underway in pilot tests throughout the country are beginning to have an important influence on state licensing standards and teacher evaluation practices. Increasingly, teachers and teacher educators are playing a stronger role in setting standards at the state level, and in the development of induction programs and professional development schools.

As teachers become involved in their own standard setting, assessments of performance based on these standards have begun to mirror the complexities of teaching. Teachers understand that teaching is an intense activity. It requires the simultaneous juggling of subject matter, cognitive goals, social goals, management of time, materials, and equipment, along with the needs and responses of individual students. Constant decisions are called for. Is Susie ready to learn some conventions as she is writing or will that discourage her from her next effort? What's going on

Changing Conceptions of Teaching

with Joe? Why is he so withdrawn at the moment? How can I find some time to work with him while the rest of the group is engaged in something productive? What is the source of Mary's difficulty with division of fractions? What strategy can I use to address her misconception?

These aspects of the complexity and simultaneity of teaching and the balancing of group goals and individual goals have been largely absent from teacher assessment practices in the past. As teachers are more involved in developing professional standards and in translating these standards into assessment and evaluation practices, this complexity is beginning to be addressed. The new assessments recognize that, as research has consistently shown, some of the most important characteristics that good teachers exhibit are flexibility, adaptability, and creativity—the ability to grab the “teachable moment”—along with the ability to diagnose what kinds of changes in instruction are needed in response to students (Darling-Hammond, Wise, & Pease, 1983; Schalock, 1979; Brown, 1985). Van Manen (1984) notes that:

...teacher competence does not consist of some systematic set of teaching skills and classroom management techniques which, once mastered, take the mystery out of teaching children. Teacher competence is that which a teacher resorts to when he or she tactfully converts just any kind of experience to a true learning experience and, in so doing, he or she restores the mystery of being a teacher.

Useful skills and abilities and scientifically directed knowledge must be combined with a capacity to perceive what matters to students, what motivates and inspires them, so that a way can be found to connect those inspirations to the broader agenda for learning. It is this capacity that teacher preparation must encourage and that teacher assessments must tap.

Tapping Teaching Ability through the NBPTS

The assessments of the new NBPTS are designed to tap into this approach to teaching and learning. There are five propositions around which the NBPTS has organized its standards (NBPTS, n.d.):

1. Teachers are committed to students and their learning: National Board-certified teachers are dedicated to making knowledge accessible to all students. They treat students equitably, recognizing individual differences. They adjust their practice, as appropriate, based on observation and knowledge of their students' interests, abilities, skills, knowledge, family circumstances, and peer relationships. They understand how students develop and learn. They are aware of the influence of context and culture on behavior. They develop students' cognitive capacity and their respect for learning, as well as their self-esteem and their respect for individual, cultural, religious and racial differences.

2. Teachers know the subjects they teach and how to teach those subjects to students. National Board-certified teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created,

organized, linked to other disciplines and applied to real-world settings. Accomplished teachers command specialized knowledge of how to convey and reveal subject matter to students. Their instructional repertoire allows them to create multiple paths to knowledge, and they are adept at teaching students how to pose and solve their own problems.

3. Teachers are responsible for managing and monitoring student learning. National Board-certified teachers create, enrich, maintain, and alter instructional settings to capture and sustain the interest of their students and to make the most effective use of time. They know how to motivate and engage groups of students to ensure a purposeful learning environment, and how to organize instruction to allow the schools' goals for students to be met. They employ multiple methods for measuring student growth and understanding and can clearly explain student performance to parents.

4. Teachers think systematically about their practice and learn from experience. National Board-certified teachers exemplify the virtues they seek to inspire in students—curiosity, tolerance, honesty, fairness, respect for diversity, and appreciation of cultural differences—and the capacities that are prerequisites for intellectual growth: the ability to reason and take multiple perspectives, to be creative and take risks, and to adopt an experimental and problem-solving orientation. Accomplished teachers draw on their knowledge of human development, subject matter and instruction, and their understanding of their students to make principled judgments about sound practice. Board-certified teachers critically examine their practice, seek the advice of others, and draw on educational research and scholarship to expand their repertoire, deepen their knowledge, sharpen their judgment and adapt their teaching to new findings, ideas and theories.

5. Teachers are members of learning communities. National Board-certified teachers contribute to the effectiveness of the school by working collaboratively with other professionals on instructional policy, curriculum development, and staff development. They can evaluate school progress and the allocation of school resources in light of their understanding of state and local educational objectives. They are knowledgeable about specialized school and community resources that can be engaged for their students' benefit, and are skilled at employing such resources as needed. Accomplished teachers find ways to work collaboratively and creatively with parents, engaging them productively in the work of the school.

The assessments developed by NBPTS are intended to be authentic measures of teacher performance. Teachers collect artifacts demonstrating their ability to perform certain tasks and activities, and include this evidence in their portfolios. This evidence includes actual teacher work and the work of their students—lesson plans, samples of assignments and of student work, discussions of their goals, intentions, and class progress, videotapes of classroom teaching events.

One example of an exercise included in the school site portfolio assessment for teachers in the English Language Arts/Early Adolescence pilot test illustrates how

Changing Conceptions of Teaching

teaching and learning are examined in conjunction with one another. Teachers were asked in the pilot test to collect student writing from two students who learn in different ways. These writing samples were collected over a period of three months. Teachers were asked to reflect on each piece of writing, determine what it demonstrated about the student's developing capacity, and to discuss what they have done instructionally to facilitate that student's growth and development. This activity requires teachers to reflect on, evaluate, and analyze student learning as it relates to teaching in very concrete ways with student work at the center of the activity.

This kind of assessment enables others to assess the teacher's thinking and performance in a complex way, grounded in an understanding of teacher intentions, decision making, and effects as well as actions in the classroom. Teachers participating in this pilot indicated that it had been a powerful professional development experience. In developing their portfolios, which also include videotapes and other analyses of teaching, they found that they reflected in new ways about their own practice. The assessment was, itself, a learning activity. In addition, this assessment began with an assumption that teachers' work is thinking and analytical work that attends to the real needs and responses of students.

This approach to assessing teacher performance is very different from traditional evaluation strategies in which teachers are expected to display a set of routine behaviors that get tallied on a check list. These behaviors frequently have no direct connection to student learning, which teachers have always wanted to have at the center of their work and assessment. These approaches to assessment, while developed for Board Certification, are beginning to impact the local and state evaluations of teachers for initial licensure, for employment decisions, and for ongoing staff development.

Implications for Teacher Preparation and Induction

The work of the NBPTS signals a new professionalism among teachers as they take charge of their own profession, design standards for it, and are willing to be held accountable for meeting those standards. The standards place student learning at the center of the teaching enterprise, articulate a strong knowledge base, and acknowledge that good teaching is contingent upon considerations of students, goals, and contexts, and must be conducted in a reciprocal exchange between teachers and students. The understandings codified in the NBPTS standards are a reflection of reforms elsewhere, in teacher education, in staff development efforts, in induction programs, and increasingly, in state licensing.

California's work on the *Draft Framework of Knowledge, Skills, and Abilities for Beginning Teachers* (see "Shaping Teacher Induction Policy in California" by Carol A. Bartell, page 27 of this issue of *Teacher Education Quarterly*) is very closely connected to the conceptions of teaching outlined by the NBPTS. This

Framework is also closely linked to an activity that some 40 states have undertaken to articulate licensing standards that are compatible with the NBPTS standards. The Interstate New Teacher Assessment and Support Consortium (INTASC), a group of state representatives and professional associations, has articulated performance-based standards for initial licensing of teachers that describe what entering teachers should know, be like, and be able to do in order to practice responsibly, and to develop the kinds of deeper expertise that will later enable highly accomplished practice. The introduction to these model standards states:

The National Board and INTASC are united in their view that the complex art of teaching requires performance-based standards and assessment strategies that are capable of capturing teachers' reasoned judgments and that evaluate what they can actually do in authentic teaching situations (INTASC, 1992, p. 1).

Already used as the basis for new standards adopted in over a dozen states, the INTASC principles were developed based on the NBPTS propositions and activities in a number of states—including California, Minnesota, New York, and Texas—that derives from a shared conception of teaching. The model licensing standards also build on the efforts of teacher educators, including the Holmes Group of education deans, the American Association of Colleges for Teacher Education's knowledge base initiatives, and Alverno College's performance-based approach to teacher education. The resulting standards are articulated in the form of ten principles, each of which is further discussed in terms of the knowledge, dispositions, and performances it implies. The view of teaching articulated in the new performance-based standards demands, as the INTASC report suggests, "that teachers integrate their knowledge of subjects, students, the community, and curriculum to create a bridge between learning goals and learner's lives." (p. 8)

As these new licensing standards and teacher preparation initiatives demonstrate, the reflective, student-centered, problem-solving orientation illustrated in the NBPTS standards and assessments is increasingly understood as a fundamental part of professional life for all teachers. Rather than teachers being viewed as implementors of externally designed and prescribed curricula, they are becoming acknowledged as curriculum developers, learning analysts, and instructional strategists who must possess the deep knowledge of teaching, learning, curriculum, and assessment once reserved for others "above" them in the educational hierarchy.

As recently as a decade ago, the notion still prevailed that knowledge and decision making authority should be hierarchically allocated and disseminated through a chain of command rather than possessed by all teachers. In the early 1980s, professionalizing teaching was usually taken to mean that some small proportion of teachers—perhaps 2 to 5 percent—would be sufficiently expert and knowledgeable to engage in decision making. These were to be the merit pay recipients, or lead teachers, or master teachers, or some other designation. A select number might do some teacher research, peer coaching, curriculum development,

Changing Conceptions of Teaching

or assessment development, taking their places in the educational hierarchy and assuming roles once reserved for administrators, but still not expected of the teaching force as a whole. The remainder of the teaching force, it was assumed, would take orders and implement prescriptions for practice as usual. That their effectiveness might rest on their own capacities to use knowledge in making decisions about learner-centered practice had not yet been understood by those regulating either the preparation of teachers or the structuring of schools.

Now, we are seeing a transformation in society's views of teaching and an understanding that all teachers need to be knowledgeable about and engaged in those activities that were wrested from the profession in this country at the turn of the century: the development of curriculum and assessment, decision making about school policies and practices, and the development and evaluation of teaching strategies. Coincidentally, these activities were never taken away from teachers in many other countries, where teachers remain highly regarded professionals. Successfully entering these new roles places new demands on teacher preparation and induction.

Entry to the Profession of Teaching

Over the last decade, many schools of education have made great strides in incorporating new understandings of teaching and learning in their curriculum for prospective teachers. More attention to learning theory, cognition, and learning strategies has accompanied a deepening appreciation for content pedagogy and constructivist teaching strategies. In addition, teacher preparation and teacher induction programs are increasingly introducing strategies that help teachers develop an experimental and problem-solving orientation. This is done by engaging prospective teachers and interns in teacher research, in school-based inquiry, and in efforts to inquire into student's experiences so that they are building an empirical understanding of learners and a capacity to analyze and reflect on what occurs in their classrooms and in the lives of their students.

These efforts to develop teachers as managers of their own inquiry stands in contrast to earlier assumptions about teacher induction and about teaching generally: that beginning teachers needed to focus only on the most rudimentary tasks of teaching with basic precepts and cookbook rules to guide them, and that teachers in general should be the recipients of knowledge rather than the generators of knowledge and understandings about students. We are now beginning to see the function of teacher preparation as empowering teachers to own, use, and develop knowledge about teaching and learning as sophisticated and powerful as the demands of their work require.

Schools and districts are also developing a greater appreciation for the fact that serious mentoring is also crucial for the development of teachers who learn to practice effectively rather than merely to cope, or—as too many new entrants do—

to leave early in their careers. Though some states have recently cut back their mentoring programs in the wake of economic declines, California is to be commended for its support and continued attention to the induction and mentoring of new teachers. It is part of the profession's commitment to the public, to students and their parents, to bring new entrants into the profession in supporting ways that facilitate their learning and help them teach well. A critical part of the development of the profession as a responsible occupation is the guarantee that its new members will be able to teach in a way that upholds the public trust that education and teaching must earn and maintain.

An important part of the current redesign of teacher preparation includes efforts to extend the concept of mentoring in more systematic ways within restructured school settings. A growing number of education schools are working with school systems to create institutions like professional development schools and internship sites that will allow new teachers to be inducted into schools as they must **become**, not only schools as they **are**. Too often there is a disjunction between the conceptions of good practice beginning teachers learn in their preparation programs and those they encounter when they begin teaching. Typically, beginning teachers are placed in the most difficult schools, those with the highest rates of teacher turnover, the greatest numbers of inexperienced staff, and the least capacity to support teacher growth and development. These are also often schools where the kinds of learner-centered practices we are seeking to develop are not well-developed or well-supported. Thus, it is difficult for beginning teachers to develop ways of really connecting what they know to what students know, when there are so few supports in the school environment for learning to practice in this more challenging way. The conditions for thoughtful, learner-centered teaching must be well supported by expert, experienced staff in order to be emulated and instilled in beginning teachers.

The professional development school offers promise for supporting beginning teachers in developing state-of-the-art practice in settings that model and support such practice and provide needed coaching and collaboration. Like teaching hospitals in the medical profession, these are schools which model best practices and are structured to foster the learning of professionals. Where districts and schools of education are coming together to create professional development schools, they are finding ways to create settings in which state of the art practice for students is married to state of the art induction for teachers (for a review, see Darling-Hammond, 1993b). There are at least 200 professional development schools across the country. These schools should be carefully examined over the next several years as they attempt to prepare teachers and develop their practices in vanguard settings with a common set of expectations that link preparation and practice.

The development of strategies for growing new teacher knowledge is also a way in which professional development schools contribute to the development of

Changing Conceptions of Teaching

the profession as a whole. Research on teaching, once considered the domain of college professors, not teachers, and most certainly not beginning teachers, is increasingly becoming a collaborative enterprise in professional development schools. Teachers, including prospective and new teachers, are engaged in school-based inquiry, in evaluation of programs, and in studying their own practices. In these and other restructured school settings, teachers actively engage in the development of local standards, curriculum, and authentic student assessments. In the process, they experience their own most powerful professional development.

Probably the most important recognition of these attempts to link school restructuring and teacher education redesign is that prospective teachers must be taught in the same ways in which they will be expected to teach. Like their students must do, teachers also construct their own understandings by doing: by collaborating, by inquiring into problems, trying and testing ideas, evaluating and reflecting on the outcomes of their work. As teacher educators, beginning teachers, and experienced teachers work together on real problems of practice in learner-centered settings, they develop a collective knowledge base, along with ownership and participation in developing a common set of understandings about practice. This development promotes deep understanding that cannot be obtained in coursework alone, although the foundation may be laid in coursework that provides a broader, theoretical frame for developing and interpreting practice.

It is this kind of work among teachers that builds shared knowledge and norms of practice, as well as a growing profession-wide understanding of effective practice. As a consequence, this kind of professional development leads as well to the development of the profession—to a profession that can create and use an expanding base of knowledge to serve all students well. That is the shared goal of school reform and teacher preparation, one that we now have a genuine opportunity and a serious obligation to achieve on behalf of all of the nation's schoolchildren.

References

- Brown, A. (1985). The importance of diagnosis in cognitive skill instruction. In S. Chipman, J. Segal, & R. Glaser (eds.), *Thinking and learning skills: Research and open questions*. Hillsdale, NJ: Erlbaum.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18 (1): 32-42.
- Bruner, J. (1966). *Toward a theory of instruction*. New York: Norton.
- Carnegie Task Force on Teaching as a Profession (1986). *A nation prepared: Teachers for the 21st century*. Washington, DC: Carnegie Forum on Education and the Economy.
- Darling-Hammond, L. (1990). Instructional policy into practice: "The power of the bottom over the top." *Educational Evaluation and Policy Analysis*, 12: 233-242.
- Darling-Hammond, L., with Sclan, E. (1992). Policy and supervision. In *Supervision in transition*, Carl Glickman (ed). Alexandria, VA: Association for Supervision and Curriculum Development, pp. 7-29.
- Darling-Hammond, L. (1993a). Reframing the school reform agenda: Developing capacity

Darling-Hammond

- for school transformation. *Phi Delta Kappan*, 74 (10): 753-761.
- Darling-Hammond, L. (1993b). *Professional development schools: Schools for developing a profession*. New York: Teachers College Press.
- Darling-Hammond, L., & Ancess, J. (in press). Authentic assessment and school development. In D. Wolf & J. Baron (eds.), *Yearbook of the National Society for the Study of Education*. Chicago, IL: University of Chicago Press.
- Darling-Hammond, L., Ancess, J., & Falk, B. (in press). *Authentic assessment in action: Studies of schools and students at work*. New York: Teachers College Press.
- Darling-Hammond, L. & Wise, A.E. (1985). Beyond standardization: State standards and school improvement. *Elementary School Journal*, 85 (3): 315-336.
- Darling-Hammond, L., Wise, A.E., & Klein, S.P. (in press). *A license to teach: The foundation for 21st century schools*. Boulder, CO: Westview Press.
- Darling-Hammond, L., Wise, A.E., & S. Pease (1983). Teacher evaluation in the organizational context: A review of the literature. *Review of Educational Research*, 53 (3): 285-328.
- David, J. (1988). *Restructuring in progress: Lessons from pioneering districts*. Washington, DC: National Governors' Association.
- Elmore, R.F. & associates (1990). *Restructuring schools: The next generation of educational reform*. San Francisco, CA: Jossey-Bass.
- Fowler, W.J. (1992). What do we know about school size? What should we know? Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Gardner, Howard (1991). *The Unschooled Mind*. New York: Basic Books.
- Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. *Educational Researcher*, 18 (8): 4-10.
- Good, T. & Brophy, J. (1986). *Educational psychology*, 3rd ed. White Plains, NY: Longman.
- Gottfredson, G.D. & Daiger, D.C. (1979). *Disruption in 600 schools*. Baltimore, MD: The Johns Hopkins University Center for Social Organization of Schools.
- Green, G. & Stevens, W. (1988). What research says about small schools. *Rural Educators*, 10 (1): 9-14.
- Haller, E.J. (1992). Small schools and higher order thinking skills. Paper presented at the annual meeting of the American Educational Research Association. San Francisco, CA.
- Howley, C.B. (1989). Synthesis of the effects of school and district size: What research says about achievement in small schools and school districts. *Journal of Rural and Small Schools*, 4 (1): 2-12.
- Howley, C.B. & Huang, G. (1991). Extracurricular participation and achievement: School size as possible mediator of SES influence among individual students. *Resources in Education*, January 1992.
- Interstate New Teacher Support and Assessment Consortium (INTASC) (1992). *Model standards for beginning teacher licensing and development: A resource for state dialogue*. Washington, DC: Council for Chief State School Officers.
- Kornhaber, M. & Gardner, H. (1993). *Varieties of excellence: Identifying and assessing children's talents*. New York: National Center for Restructuring Education, Schools, and Teaching, Teachers College, Columbia University.
- MacMillan, J. B. & Pendlebury, S. (1985). The Florida Performance Measurement System: A consideration. *Teachers College Record*, 87: 69-78.

Changing Conceptions of Teaching

- McKnight, C.C., Crosswhite, F.J., Dossey, J.A., Kifer, E., Swafford, S.O., Travers, K.J., & Cooney, T.J. (1987). *The underachieving curriculum: Assessing U.S. school mathematics from an international perspective*. Champaign, IL: Stipes Publishing.
- National Board for Professional Teaching Standards (NBPTS) (n.d.) *What teachers should know and be able to do*. Detroit, MI: NBPTS.
- National Institute of Education (1977). *Violent Schools—Safe Schools: The Safe School Report to Congress*. Washington, DC: National Institute of Education.
- Peterson, P. (1990). The California study of elementary mathematics. *Educational Evaluation and Policy Analysis*, 12: 257-262.
- Resnick, L. (1987). *Education and learning to think*. Washington, DC: National Academy Press.
- Schallock, D. (1979). Research on teacher selection. In D.C. Berliner (ed.), *Review of research in education*, Vol. 7. Washington, DC: American Educational Research Association.
- van Manen, M. (1984). Reflections on teacher experience and pedagogic competence. In E.C. Short (ed.), *Competence: Inquiries into its meaning and acquisition in educational settings*. Lanham, MD: University Press of America.
- Wilson, S. M. (1990). A conflict of interests: The case of Mark Black. *Educational Evaluation and Policy Analysis*, 12: 318.
- Wise, Arthur E. (1988, January). Legislated Learning Revisited. *Phi Delta Kappan*.

Changing Conceptions of Teaching and Teacher Development

By **Linda Darling-Hammond**

Linda Darling-Hammond is a professor and co-director of the National Center for Restructuring Education, Schools, and Teaching at Teachers College, Columbia University, New York City, New York. This article has been developed from presentations to the California Beginning Teacher Induction Network on August 5 & 6, 1993.

At this moment in history, a revolution is taking place in teaching, learning, and schooling in this country, and those who are preparing and inducting new teachers are at the very center of this revolution. As a society, we are reshaping the mission of education and of teaching, expecting that schools will not only offer education, but ensure learning; that teachers will not only “cover the curriculum,” but create a bridge between the needs and interests of each learner and the attainment of challenging learning goals. We expect all children, rather than only a few, to be prepared to think critically, solve problems, produce, and create. This demands that teachers have as deep a knowledge of learners and their learning as it does of subjects and teaching strategies (Darling-Hammond, 1993a).

Thus, the invention of 21st century schools that can educate all children well rests, first and foremost,

Changing Conceptions of Teaching

upon the development of a highly qualified and committed teaching force. The knowledge, skills, abilities, and commitments of teachers prepared today will shape and inform what is possible for the future generation of students. Though not yet universally recognized, the preparation, induction, and professional development of teachers is the core issue for educational reform.

Ten years ago, the idea that teacher knowledge was critical for educational improvement had little currency. There was a perception that educational reform could occur simply by creating more finely-tuned regulations to be imposed on schools. Continuing a tradition begun at the turn of the 20th century, policymakers searched for the right set of prescriptions, textbook adoptions, and curriculum directives to be packaged and mandated to guide practice. Educational reform was to be “teacher proof.” Hundreds of pieces of legislation and thousands of discrete regulations prescribing what educators should do, when, and how, were testament to this effort.

Since that time, the failure of these efforts to transform life in classrooms has become apparent (Darling-Hammond & Wise, 1985; Carnegie Task Force, 1986; Wise, 1988). In recent years, the policy community has come to understand that building the capacity of teachers is the only hope for transforming the nature of teaching and learning in schools in our country. This shift is confirmed by new initiatives among major foundations and the federal government to fund teacher development efforts, and by emerging proposals among the states to rethink teacher licensing along with preservice and inservice education (see, *e.g.*, INTASC, 1993; Darling-Hammond, Wise, & Klein, in press).

The success of this reform movement will depend on and will reflect the leadership exerted by those who shape the initial education and ongoing development of new teachers. The nation’s changing mission for schooling and teaching poses new challenges to teachers and teacher educators—challenges that will demand more intensive and imaginative approaches to educating and inducting new teachers. The profession must take the lead in restructuring teacher preparation alongside the restructuring of schools so that teachers are prepared to teach in the ways that new goals for student learning demand.

Restructuring to Connect Teaching and Learning

Over the last decade, the rhetoric of school improvement has changed from one of “school reform” to one of “school restructuring” (Darling-Hammond, 1993a; Elmore *et al.*, 1990; David, 1988). Restructuring extends beyond efforts to make the old system work better—trying to do the same things a little harder or more efficiently—to an overall rethinking of the design and structure of schools and teaching, of educational systems and the profession as a whole. This restructuring must be done in a way that personalizes schooling for students so they have strong and empowering relationships with adults, and so that school organizations are

Darling-Hammond

structured to prevent them from “falling through the cracks.” It must also occur in ways that provide a thinking curriculum for all students and a collaborative environment focused on learning and continual improvement for all adults in the school community.

One example of this kind of radical restructuring can currently be seen in the New York City public school system, the birthplace of the warehouse comprehensive high school. Restructuring there has meant replacing the large, impersonal high school, highly tracked and organized by assembly line methods, with much smaller high schools of 200-500 students. Over the last two years, 50 new small high schools have been conceived and several dozen already launched by teams of teachers, other educators, and members of community organizations who bring new ideas, long in the making, to the design of secondary education.

In these schools, students often study an interdisciplinary core curriculum and work with the same teachers or advisors over a period of several years. Parents are closely involved in the schooling process, and authentic assessments involve staff, students, and parents together in examining what students have learned. Research and experience demonstrate that these smaller, more personal schools are more effective in heightening achievement, in graduating students, in creating good personal relationships, and in providing leadership opportunities to students (Haller, 1992; Fowler, 1992; Howley & Huang, 1991; Howley, 1989; Green & Stevens, 1988; Darling-Hammond, Aness, & Falk, in press). Most importantly, these schools are more effective in allowing students to become bonded to important adults in a learning community which can play the role that other communities and families find it harder and harder to play.

As the world becomes less and less supportive for young people, it is important for schools to become more family-like and personalized in their treatment of children. One way to increase this personalization is to keep students, advisors, and teachers together for longer periods of time. In restructured high schools across the country, including but not limited to those that are members of the Coalition of Essential Schools, advisors work with groups of 10-to-15 students over a number of years. These advisors get to know the students and their families well. They call or meet with the parents many times a year and work directly and intensively with the family. This creates new relationships between adults and children, prevents students from becoming anonymous ciphers who could “fall through the cracks,” and allows teachers to come to know the minds of students well.

This model of interaction between teachers and students is also found in many European schools where teachers are engaged in working with the same group of students for several years. And where school structures allow teachers to engage in more personalized and extended work with students in the United States, achievement gains are quite substantial, along with more positive feelings toward self and school, and more positive behavior (NIE, 1977; Gottfredson & Daiger, 1979). This is because teaching involves much more than conveying subject matter to passive

Changing Conceptions of Teaching

recipients. A substantial part of effective teaching is based on knowledge of students and their experiences, their prior knowledge, and the ways in which they learn.

Present school structures sacrifice the deep knowledge of students that would enable more adaptive teaching when they create depersonalized, fragmented ways of organizing students and teachers for instruction. When teachers see large numbers of students in a day for short periods of time, and then pass on those students to another teacher at the end of the semester or at the end of the year, all the knowledge they have just begun to build about those students leaves with the students without having been put to full use. There is very little time to begin to adapt teaching based on the understandings of student learning that are just beginning to be obvious around March or April, and there is no way to pass that knowledge base on to the next teacher through traditional school assessment and reporting systems. School schedules, organizational arrangements, and teaching and assessment strategies are all structured around the presumption that student thinking does not matter for teaching.

Transforming teaching and learning in American schools rests on an understanding of students—not only what they know, but also how they think. This transformation calls for building teacher capacity, so teachers are well prepared to meet student needs and supported organizationally in their efforts to do so. Teachers need to build a rich knowledge base and develop tools for accessing student thinking, for understanding students' prior knowledge and backgrounds, and for connecting to students' families and communities. If teaching fails to connect with the students, there is no learning.

Extending the time that individual teachers have with the same group of students—the number of hours in the day and week as well as the number of years of work together—enables teachers and students to tackle deeper and more complex kinds of learning activities as well as to shape those in ways that are respectful of and connected to students' interests, experiences, and prior knowledge. In addition to new ways of organizing school time, schedules, and instructional arrangements, the advent of portfolio assessment is another hopeful development, one that enables teachers to hand on to other teachers a set of rich understandings of students' learning. The portfolio can provide a knowledge base about students through careful collections of examples of the student's work that provide insights into the student's thinking and ways of learning.

The shared agenda of school restructuring and teacher preparation is in helping teachers derive those insights and make the necessary connections between students' needs and curriculum goals. Increasingly, in California as elsewhere, efforts to rethink teacher preparation and rethink schooling are underway simultaneously. Changed schools require changes in the way teachers are prepared to work together in supporting student learning.

Knowledge of Student Learning

Teacher educators, along with reformers and practitioners engaged in school restructuring, are developing a new pedagogy built on several decades of research about teaching and learning. These understandings have important implications for the preparation of teachers and for the evaluation and assessment of their performance in the classroom.

First, we now understand that students do not learn by accruing discrete bits of information that eventually add up to concepts and understanding. Instead, students, as well as adults, learn things in the context of working on and testing ideas. They construct their own knowledge based on their previous understandings and experiences and on the new experiences that they encounter. Effective learning experiences must be structured to help learners engage powerful ideas whole through direct experiences, rather than in tiny, disconnected snippets presented in decontextualized worksheets or texts. Such experiences must be structured to create bridges between the very different backgrounds of individual students and common curriculum goals, by allowing learners to bring their practical knowledge and experiences into the classroom as the basis upon which they build new understandings (Bruner, 1966; Brown, Collins, & Duguid, 1989; Resnick, 1987).

Second, we understand as well that there is no single way to learn. Students have multiple intelligences, diverse approaches to learning, and different cultural experiences, talents, and interests that they bring to their learning. They learn most effectively when they build on their areas of strength rather than on modes of performance that are less well-developed. This diversity demands a pedagogy in which teachers use a variety of approaches to tap into students' abilities. It demands that teachers understand how their students think as well as what they know (Gardner & Hatch, 1989; Kornhaber & Gardner, 1993; Darling-Hammond & Aness, in press).

Teachers who are able to teach in this way understand that teaching is not talking and learning is not listening. Such teachers find ways to get students engaged in inquiry; they get their students talking about what they are thinking and how they are understanding and interpreting what they learn. When the teacher understands what students are bringing to a learning experience, she can meet them with carefully crafted opportunities that extend their understanding. This demands a different pedagogy in the classroom than one in which the teacher is the information transmitter and students are passive receptacles. This more complex approach to teaching requires not only that teachers have a deep knowledge of subject matter and a wide repertoire of teaching strategies, but also that they have intimate knowledge of students' growth, experience, learning styles, and development.

This understanding of learners and learning, I would argue, is the most neglected aspect of teacher preparation in this country. Licensing and preparation have focused more on subject matter knowledge and methods than on a strong

Changing Conceptions of Teaching

theoretical and empirical understanding of students and their learning. This is especially true for secondary school teachers who are rarely given access to knowledge about how students learn, develop, think, and perform. Teachers are rarely prepared to critically evaluate students' progress and learning in light of knowledge about cognitive, social, physical, and psychological development, multiple intelligences, and diverse performance modes; to develop curriculum grounded in a deep understanding of learning theory and learning differences; or to create assessments that can reveal student strengths, needs, and understandings. Giving teachers access to such knowledge is a major part of the transformation of teacher preparation and licensing that is on the horizon.

These efforts to deepen teachers' knowledge are one outgrowth of reformers' efforts to encourage attention to higher order thinking and performance skills. Teaching students to think critically and develop complex performance abilities cannot be managed through a "teacher-proof" approach to curriculum. Lower order skills and rote procedural knowledge may be represented in sequenced and age-graded worksheets, basal readers, texts, and curriculum packages that can be used as crutches for rote approaches to teaching. If the goal is memorization and recall on multiple choice or short answer tests, rather than a deeper understanding and application of knowledge, such teacher-proof materials can be used with some degree of success. But students cannot learn from these kinds of teaching materials and approaches how to frame and solve problems, how to communicate important and complex ideas, or how to apply what they know in novel situations.

In fact, it turns out that when students learn to acquire bits of information through an information transmittal mode, they remember only a tiny proportion of the information several months or years later. Furthermore, they are unable to transfer the learning to other kinds of situations or use it effectively for problem solving. When students have opportunities to inquire and act on their knowledge, to frame and solve problems, the amount that they learn and their flexibility in using that understanding later is substantially greater (Good & Brophy, 1986).

This kind of meaningful learning requires engaging students in inquiry, discovery, and hands-on problem solving. The teacher functions as a coach, a guide, a facilitator, and a questioner, as well as an information transmitter. This kind of teaching and learning requires longer stretches of time for working through questions and tough problems; it is more taxing and demanding of both students and teachers; it requires that teachers have greater command of both content and pedagogy in order to guide and manage students' learning.

Teaching for understanding requires much more than a seven-step lesson plan, flawlessly delivered, a formulaic collection of techniques and routines. Research on the outcomes of such formulaic approaches to teaching demonstrates that they have dysfunctional consequences for learning because they assume that students are both passive and standardized—assumptions that are fundamentally flawed. The assumption that teaching is merely the implementation of standardized practices

undermines teacher effectiveness and leads to dysfunctional policies for preparing and evaluating teachers (Darling-Hammond with Sclan, 1992).

Expectations for Teacher Performance

These new understandings about student learning and the kind of teaching required to facilitate such learning are currently at odds with many widely-used strategies for teacher evaluation and for the management of instruction that have been adopted in school districts across this country. The redesign of teacher education and of schooling must explicitly address these tensions, transforming policies in concert with practices.

For example, the Florida performance measurement system for beginning teacher evaluation, which is used in a number of other states and many districts as well, tallies certain kinds of standardized teacher behaviors. These tallies ignore and sometimes actually conflict with research on teaching and learning, including the need to connect new ideas to learners' own experiences. Teachers in the Florida system are downgraded for asking questions that draw on students' personal knowledge and experiences because, the rating manual says, while this is sometimes necessary, it slows the pace of the lesson, which is conceived as information transmittal rather than the development of understanding (Darling-Hammond with Sclan, 1992; Macmillan & Pendlebury, 1985).

Teachers who are trained to teach to performance evaluation models like this one will be unable to succeed on the new National Board for Professional Teaching Standards (NBPTS) assessments for certifying highly accomplished teachers. The NBPTS assessments, discussed more fully below, are grounded in a knowledge base about how children learn and what teaching strategies are needed to support this learning, and they require the kinds of teaching such simplistic models preclude. As the profession moves to create the conditions for learner-centered teaching, it will need to ferret out the outmoded and faulty assumptions about teaching and learning that are built into a variety of policies, programs, and instruments that have been developed or adopted in states and school districts.

Other examples of these counterproductive policies were evident in a study of the implementation of California's new Mathematics Framework (Peterson, 1990). In addition to lack of staff development support for learning new approaches to practice, two previously-enacted sets of policies stood most prominently in the way of teachers enacting the intentions of the framework. The first obstacle was the existing standardized testing system which is based on a conception of coverage and rote learning at odds with the kind of teaching for understanding that the framework seeks to encourage. The second was the set of expectations for teaching routines that are incompatible with teaching for understanding which many districts convey to teachers through their evaluations of teacher performance (Darling-Hammond, 1990).

Changing Conceptions of Teaching

As one teacher explained about the pressures posed by standardized tests:

Teaching for understanding is what we are supposed to be doing.... It's difficult to test, folks. That is the bottom line.... They want me to teach in a way that they can't test. Except that I'm held accountable to the test. It's a Catch 22. (Wilson, 1990, p. 318)

The same teacher raised the common concern that the kind of teaching that allows students to delve deeply and explore ideas poses trade-offs between depth and breadth of coverage. As he noted in reading a statement from the framework:

Teaching for understanding...takes longer to learn. Hey, if I were spending the time to really get these kids to learn it, I might be several pages back. (Wilson, 1990, p. 318)

Pacing schedules and the idea that coverage is more important than understanding are deeply imbued in American schools. International comparisons show that American students do as well as students in other countries on rote procedures, but do much worse in mathematics and science on applications and problem solving (McKnight *et al.*, 1987). One reason is the American curricular and testing focus on rapid, superficial coverage of material and then the subsequent need to repeat much of what has been covered in previous years because students have failed to retain or understand it. This pedagogy of tell and drill is unlike pedagogy elsewhere that is focused on exploration of ideas. For example, Japanese students may spend an entire class period talking through a single math problem as each student explains his thinking and how he arrived at a solution. This careful, thoughtful approach develops the capacity to think and analyze rather than simply "completing" a set number of problems solved by algorithm. Howard Gardner, whose work has redefined our understanding of intelligence and performance, argues that coverage is the enemy of deep understanding (Gardner, 1991).

The other barrier for teachers' enactment of the California Mathematics Framework was the use of direct instruction models underlying teacher evaluation approaches in many districts. Teachers are often taught to use and are evaluated by models that call for a particular kind of teacher-centered lesson focused primarily on giving information, supervising guided practice, and testing recall at the end of the highly structured session. This teacher-directed lesson collides with an inquiry approach to teaching and learning in which questions posed are as important as answers given, and students' exploration rather than teacher's talk is the center of activity.

Such observations should heighten our awareness of the ways in which policies and practices intertwine and should strengthen our resolve to make both more compatible with students' learning needs. Beginning teachers experience cognitive dissonance when faced with dilemmas such as these: they are being asked to do one thing on the one hand, but to do it in a way which conflicts with something else they

are being asked to do on the other. Veteran teachers can often sort out these inconsistencies, ignoring certain things and substituting other practices in a way that makes sense to them by selectively attending to and integrating the various cues in the environment. Beginning teachers lack the experience and expertise to easily accomplish this. What beginning teachers need as they are learning to teach is a coherent set of signals about what kind of teaching and learning are valued. Policies and practices around that common set of values and expectations are needed to support a common conception of teaching and teacher knowledge throughout teacher education and the initial years of teaching.

Standards of Practice

One reason for a lack of common expectations for teacher performance is that teachers, in contrast to other professions, have not taken charge of their own standards. In other professions, organizations of professionals exist which take responsibility for the three basic missions of a profession: (1) insuring that all decisions are knowledge-based; (2) insuring that decisions are made in the best interest of clients; and (3) assuming the responsibility for defining, transmitting, and enforcing standards of practice based on that professional knowledge and on those ethical commitments.

Until very recently, there have not been clearly articulated standards of practice defined and accepted by the profession. The NBPTS was established in 1987 to accomplish this important task. It is a 63-member body, two-thirds of whom are teachers, a majority of whom are regularly engaged with students in classrooms. The NBPTS has begun to define standards of practice and is developing assessments for the certification of highly accomplished teachers. The equivalent of this task in medicine, for example, is Board certification of physicians, a step taken after initial state licensure, as a designation of advanced accomplishment recognized by the profession.

The NBPTS's standards, developed by highly-respected educators, and the accompanying assessments that are now underway in pilot tests throughout the country are beginning to have an important influence on state licensing standards and teacher evaluation practices. Increasingly, teachers and teacher educators are playing a stronger role in setting standards at the state level, and in the development of induction programs and professional development schools.

As teachers become involved in their own standard setting, assessments of performance based on these standards have begun to mirror the complexities of teaching. Teachers understand that teaching is an intense activity. It requires the simultaneous juggling of subject matter, cognitive goals, social goals, management of time, materials, and equipment, along with the needs and responses of individual students. Constant decisions are called for. Is Susie ready to learn some conventions as she is writing or will that discourage her from her next effort? What's going on

Changing Conceptions of Teaching

with Joe? Why is he so withdrawn at the moment? How can I find some time to work with him while the rest of the group is engaged in something productive? What is the source of Mary's difficulty with division of fractions? What strategy can I use to address her misconception?

These aspects of the complexity and simultaneity of teaching and the balancing of group goals and individual goals have been largely absent from teacher assessment practices in the past. As teachers are more involved in developing professional standards and in translating these standards into assessment and evaluation practices, this complexity is beginning to be addressed. The new assessments recognize that, as research has consistently shown, some of the most important characteristics that good teachers exhibit are flexibility, adaptability, and creativity—the ability to grab the “teachable moment”—along with the ability to diagnose what kinds of changes in instruction are needed in response to students (Darling-Hammond, Wise, & Pease, 1983; Schalock, 1979; Brown, 1985). Van Manen (1984) notes that:

...teacher competence does not consist of some systematic set of teaching skills and classroom management techniques which, once mastered, take the mystery out of teaching children. Teacher competence is that which a teacher resorts to when he or she tactfully converts just any kind of experience to a true learning experience and, in so doing, he or she restores the mystery of being a teacher.

Useful skills and abilities and scientifically directed knowledge must be combined with a capacity to perceive what matters to students, what motivates and inspires them, so that a way can be found to connect those inspirations to the broader agenda for learning. It is this capacity that teacher preparation must encourage and that teacher assessments must tap.

Tapping Teaching Ability through the NBPTS

The assessments of the new NBPTS are designed to tap into this approach to teaching and learning. There are five propositions around which the NBPTS has organized its standards (NBPTS, n.d.):

1. Teachers are committed to students and their learning: National Board-certified teachers are dedicated to making knowledge accessible to all students. They treat students equitably, recognizing individual differences. They adjust their practice, as appropriate, based on observation and knowledge of their students' interests, abilities, skills, knowledge, family circumstances, and peer relationships. They understand how students develop and learn. They are aware of the influence of context and culture on behavior. They develop students' cognitive capacity and their respect for learning, as well as their self-esteem and their respect for individual, cultural, religious and racial differences.

2. Teachers know the subjects they teach and how to teach those subjects to students. National Board-certified teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created,

organized, linked to other disciplines and applied to real-world settings. Accomplished teachers command specialized knowledge of how to convey and reveal subject matter to students. Their instructional repertoire allows them to create multiple paths to knowledge, and they are adept at teaching students how to pose and solve their own problems.

3. Teachers are responsible for managing and monitoring student learning. National Board-certified teachers create, enrich, maintain, and alter instructional settings to capture and sustain the interest of their students and to make the most effective use of time. They know how to motivate and engage groups of students to ensure a purposeful learning environment, and how to organize instruction to allow the schools' goals for students to be met. They employ multiple methods for measuring student growth and understanding and can clearly explain student performance to parents.

4. Teachers think systematically about their practice and learn from experience. National Board-certified teachers exemplify the virtues they seek to inspire in students—curiosity, tolerance, honesty, fairness, respect for diversity, and appreciation of cultural differences—and the capacities that are prerequisites for intellectual growth: the ability to reason and take multiple perspectives, to be creative and take risks, and to adopt an experimental and problem-solving orientation. Accomplished teachers draw on their knowledge of human development, subject matter and instruction, and their understanding of their students to make principled judgments about sound practice. Board-certified teachers critically examine their practice, seek the advice of others, and draw on educational research and scholarship to expand their repertoire, deepen their knowledge, sharpen their judgment and adapt their teaching to new findings, ideas and theories.

5. Teachers are members of learning communities. National Board-certified teachers contribute to the effectiveness of the school by working collaboratively with other professionals on instructional policy, curriculum development, and staff development. They can evaluate school progress and the allocation of school resources in light of their understanding of state and local educational objectives. They are knowledgeable about specialized school and community resources that can be engaged for their students' benefit, and are skilled at employing such resources as needed. Accomplished teachers find ways to work collaboratively and creatively with parents, engaging them productively in the work of the school.

The assessments developed by NBPTS are intended to be authentic measures of teacher performance. Teachers collect artifacts demonstrating their ability to perform certain tasks and activities, and include this evidence in their portfolios. This evidence includes actual teacher work and the work of their students—lesson plans, samples of assignments and of student work, discussions of their goals, intentions, and class progress, videotapes of classroom teaching events.

One example of an exercise included in the school site portfolio assessment for teachers in the English Language Arts/Early Adolescence pilot test illustrates how

Changing Conceptions of Teaching

teaching and learning are examined in conjunction with one another. Teachers were asked in the pilot test to collect student writing from two students who learn in different ways. These writing samples were collected over a period of three months. Teachers were asked to reflect on each piece of writing, determine what it demonstrated about the student's developing capacity, and to discuss what they have done instructionally to facilitate that student's growth and development. This activity requires teachers to reflect on, evaluate, and analyze student learning as it relates to teaching in very concrete ways with student work at the center of the activity.

This kind of assessment enables others to assess the teacher's thinking and performance in a complex way, grounded in an understanding of teacher intentions, decision making, and effects as well as actions in the classroom. Teachers participating in this pilot indicated that it had been a powerful professional development experience. In developing their portfolios, which also include videotapes and other analyses of teaching, they found that they reflected in new ways about their own practice. The assessment was, itself, a learning activity. In addition, this assessment began with an assumption that teachers' work is thinking and analytical work that attends to the real needs and responses of students.

This approach to assessing teacher performance is very different from traditional evaluation strategies in which teachers are expected to display a set of routine behaviors that get tallied on a check list. These behaviors frequently have no direct connection to student learning, which teachers have always wanted to have at the center of their work and assessment. These approaches to assessment, while developed for Board Certification, are beginning to impact the local and state evaluations of teachers for initial licensure, for employment decisions, and for ongoing staff development.

Implications for Teacher Preparation and Induction

The work of the NBPTS signals a new professionalism among teachers as they take charge of their own profession, design standards for it, and are willing to be held accountable for meeting those standards. The standards place student learning at the center of the teaching enterprise, articulate a strong knowledge base, and acknowledge that good teaching is contingent upon considerations of students, goals, and contexts, and must be conducted in a reciprocal exchange between teachers and students. The understandings codified in the NBPTS standards are a reflection of reforms elsewhere, in teacher education, in staff development efforts, in induction programs, and increasingly, in state licensing.

California's work on the *Draft Framework of Knowledge, Skills, and Abilities for Beginning Teachers* (see "Shaping Teacher Induction Policy in California" by Carol A. Bartell, page 27 of this issue of *Teacher Education Quarterly*) is very closely connected to the conceptions of teaching outlined by the NBPTS. This

Framework is also closely linked to an activity that some 40 states have undertaken to articulate licensing standards that are compatible with the NBPTS standards. The Interstate New Teacher Assessment and Support Consortium (INTASC), a group of state representatives and professional associations, has articulated performance-based standards for initial licensing of teachers that describe what entering teachers should know, be like, and be able to do in order to practice responsibly, and to develop the kinds of deeper expertise that will later enable highly accomplished practice. The introduction to these model standards states:

The National Board and INTASC are united in their view that the complex art of teaching requires performance-based standards and assessment strategies that are capable of capturing teachers' reasoned judgments and that evaluate what they can actually do in authentic teaching situations (INTASC, 1992, p. 1).

Already used as the basis for new standards adopted in over a dozen states, the INTASC principles were developed based on the NBPTS propositions and activities in a number of states—including California, Minnesota, New York, and Texas—that derives from a shared conception of teaching. The model licensing standards also build on the efforts of teacher educators, including the Holmes Group of education deans, the American Association of Colleges for Teacher Education's knowledge base initiatives, and Alverno College's performance-based approach to teacher education. The resulting standards are articulated in the form of ten principles, each of which is further discussed in terms of the knowledge, dispositions, and performances it implies. The view of teaching articulated in the new performance-based standards demands, as the INTASC report suggests, "that teachers integrate their knowledge of subjects, students, the community, and curriculum to create a bridge between learning goals and learner's lives." (p. 8)

As these new licensing standards and teacher preparation initiatives demonstrate, the reflective, student-centered, problem-solving orientation illustrated in the NBPTS standards and assessments is increasingly understood as a fundamental part of professional life for all teachers. Rather than teachers being viewed as implementors of externally designed and prescribed curricula, they are becoming acknowledged as curriculum developers, learning analysts, and instructional strategists who must possess the deep knowledge of teaching, learning, curriculum, and assessment once reserved for others "above" them in the educational hierarchy.

As recently as a decade ago, the notion still prevailed that knowledge and decision making authority should be hierarchically allocated and disseminated through a chain of command rather than possessed by all teachers. In the early 1980s, professionalizing teaching was usually taken to mean that some small proportion of teachers—perhaps 2 to 5 percent—would be sufficiently expert and knowledgeable to engage in decision making. These were to be the merit pay recipients, or lead teachers, or master teachers, or some other designation. A select number might do some teacher research, peer coaching, curriculum development,

Changing Conceptions of Teaching

or assessment development, taking their places in the educational hierarchy and assuming roles once reserved for administrators, but still not expected of the teaching force as a whole. The remainder of the teaching force, it was assumed, would take orders and implement prescriptions for practice as usual. That their effectiveness might rest on their own capacities to use knowledge in making decisions about learner-centered practice had not yet been understood by those regulating either the preparation of teachers or the structuring of schools.

Now, we are seeing a transformation in society's views of teaching and an understanding that all teachers need to be knowledgeable about and engaged in those activities that were wrested from the profession in this country at the turn of the century: the development of curriculum and assessment, decision making about school policies and practices, and the development and evaluation of teaching strategies. Coincidentally, these activities were never taken away from teachers in many other countries, where teachers remain highly regarded professionals. Successfully entering these new roles places new demands on teacher preparation and induction.

Entry to the Profession of Teaching

Over the last decade, many schools of education have made great strides in incorporating new understandings of teaching and learning in their curriculum for prospective teachers. More attention to learning theory, cognition, and learning strategies has accompanied a deepening appreciation for content pedagogy and constructivist teaching strategies. In addition, teacher preparation and teacher induction programs are increasingly introducing strategies that help teachers develop an experimental and problem-solving orientation. This is done by engaging prospective teachers and interns in teacher research, in school-based inquiry, and in efforts to inquire into student's experiences so that they are building an empirical understanding of learners and a capacity to analyze and reflect on what occurs in their classrooms and in the lives of their students.

These efforts to develop teachers as managers of their own inquiry stands in contrast to earlier assumptions about teacher induction and about teaching generally: that beginning teachers needed to focus only on the most rudimentary tasks of teaching with basic precepts and cookbook rules to guide them, and that teachers in general should be the recipients of knowledge rather than the generators of knowledge and understandings about students. We are now beginning to see the function of teacher preparation as empowering teachers to own, use, and develop knowledge about teaching and learning as sophisticated and powerful as the demands of their work require.

Schools and districts are also developing a greater appreciation for the fact that serious mentoring is also crucial for the development of teachers who learn to practice effectively rather than merely to cope, or—as too many new entrants do—

to leave early in their careers. Though some states have recently cut back their mentoring programs in the wake of economic declines, California is to be commended for its support and continued attention to the induction and mentoring of new teachers. It is part of the profession's commitment to the public, to students and their parents, to bring new entrants into the profession in supporting ways that facilitate their learning and help them teach well. A critical part of the development of the profession as a responsible occupation is the guarantee that its new members will be able to teach in a way that upholds the public trust that education and teaching must earn and maintain.

An important part of the current redesign of teacher preparation includes efforts to extend the concept of mentoring in more systematic ways within restructured school settings. A growing number of education schools are working with school systems to create institutions like professional development schools and internship sites that will allow new teachers to be inducted into schools as they must **become**, not only schools as they **are**. Too often there is a disjunction between the conceptions of good practice beginning teachers learn in their preparation programs and those they encounter when they begin teaching. Typically, beginning teachers are placed in the most difficult schools, those with the highest rates of teacher turnover, the greatest numbers of inexperienced staff, and the least capacity to support teacher growth and development. These are also often schools where the kinds of learner-centered practices we are seeking to develop are not well-developed or well-supported. Thus, it is difficult for beginning teachers to develop ways of really connecting what they know to what students know, when there are so few supports in the school environment for learning to practice in this more challenging way. The conditions for thoughtful, learner-centered teaching must be well supported by expert, experienced staff in order to be emulated and instilled in beginning teachers.

The professional development school offers promise for supporting beginning teachers in developing state-of-the-art practice in settings that model and support such practice and provide needed coaching and collaboration. Like teaching hospitals in the medical profession, these are schools which model best practices and are structured to foster the learning of professionals. Where districts and schools of education are coming together to create professional development schools, they are finding ways to create settings in which state of the art practice for students is married to state of the art induction for teachers (for a review, see Darling-Hammond, 1993b). There are at least 200 professional development schools across the country. These schools should be carefully examined over the next several years as they attempt to prepare teachers and develop their practices in vanguard settings with a common set of expectations that link preparation and practice.

The development of strategies for growing new teacher knowledge is also a way in which professional development schools contribute to the development of

Changing Conceptions of Teaching

the profession as a whole. Research on teaching, once considered the domain of college professors, not teachers, and most certainly not beginning teachers, is increasingly becoming a collaborative enterprise in professional development schools. Teachers, including prospective and new teachers, are engaged in school-based inquiry, in evaluation of programs, and in studying their own practices. In these and other restructured school settings, teachers actively engage in the development of local standards, curriculum, and authentic student assessments. In the process, they experience their own most powerful professional development.

Probably the most important recognition of these attempts to link school restructuring and teacher education redesign is that prospective teachers must be taught in the same ways in which they will be expected to teach. Like their students must do, teachers also construct their own understandings by doing: by collaborating, by inquiring into problems, trying and testing ideas, evaluating and reflecting on the outcomes of their work. As teacher educators, beginning teachers, and experienced teachers work together on real problems of practice in learner-centered settings, they develop a collective knowledge base, along with ownership and participation in developing a common set of understandings about practice. This development promotes deep understanding that cannot be obtained in coursework alone, although the foundation may be laid in coursework that provides a broader, theoretical frame for developing and interpreting practice.

It is this kind of work among teachers that builds shared knowledge and norms of practice, as well as a growing profession-wide understanding of effective practice. As a consequence, this kind of professional development leads as well to the development of the profession—to a profession that can create and use an expanding base of knowledge to serve all students well. That is the shared goal of school reform and teacher preparation, one that we now have a genuine opportunity and a serious obligation to achieve on behalf of all of the nation's schoolchildren.

References

- Brown, A. (1985). The importance of diagnosis in cognitive skill instruction. In S. Chipman, J. Segal, & R. Glaser (eds.), *Thinking and learning skills: Research and open questions*. Hillsdale, NJ: Erlbaum.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18 (1): 32-42.
- Bruner, J. (1966). *Toward a theory of instruction*. New York: Norton.
- Carnegie Task Force on Teaching as a Profession (1986). *A nation prepared: Teachers for the 21st century*. Washington, DC: Carnegie Forum on Education and the Economy.
- Darling-Hammond, L. (1990). Instructional policy into practice: "The power of the bottom over the top." *Educational Evaluation and Policy Analysis*, 12: 233-242.
- Darling-Hammond, L., with Sclan, E. (1992). Policy and supervision. In *Supervision in transition*, Carl Glickman (ed). Alexandria, VA: Association for Supervision and Curriculum Development, pp. 7-29.
- Darling-Hammond, L. (1993a). Reframing the school reform agenda: Developing capacity

Darling-Hammond

- for school transformation. *Phi Delta Kappan*, 74 (10): 753-761.
- Darling-Hammond, L. (1993b). *Professional development schools: Schools for developing a profession*. New York: Teachers College Press.
- Darling-Hammond, L., & Ancess, J. (in press). Authentic assessment and school development. In D. Wolf & J. Baron (eds.), *Yearbook of the National Society for the Study of Education*. Chicago, IL: University of Chicago Press.
- Darling-Hammond, L., Ancess, J., & Falk, B. (in press). *Authentic assessment in action: Studies of schools and students at work*. New York: Teachers College Press.
- Darling-Hammond, L. & Wise, A.E. (1985). Beyond standardization: State standards and school improvement. *Elementary School Journal*, 85 (3): 315-336.
- Darling-Hammond, L., Wise, A.E., & Klein, S.P. (in press). *A license to teach: The foundation for 21st century schools*. Boulder, CO: Westview Press.
- Darling-Hammond, L., Wise, A.E., & S. Pease (1983). Teacher evaluation in the organizational context: A review of the literature. *Review of Educational Research*, 53 (3): 285-328.
- David, J. (1988). *Restructuring in progress: Lessons from pioneering districts*. Washington, DC: National Governors' Association.
- Elmore, R.F. & associates (1990). *Restructuring schools: The next generation of educational reform*. San Francisco, CA: Jossey-Bass.
- Fowler, W.J. (1992). What do we know about school size? What should we know? Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Gardner, Howard (1991). *The Unschooled Mind*. New York: Basic Books.
- Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. *Educational Researcher*, 18 (8): 4-10.
- Good, T. & Brophy, J. (1986). *Educational psychology*, 3rd ed. White Plains, NY: Longman.
- Gottfredson, G.D. & Daiger, D.C. (1979). *Disruption in 600 schools*. Baltimore, MD: The Johns Hopkins University Center for Social Organization of Schools.
- Green, G. & Stevens, W. (1988). What research says about small schools. *Rural Educators*, 10 (1): 9-14.
- Haller, E.J. (1992). Small schools and higher order thinking skills. Paper presented at the annual meeting of the American Educational Research Association. San Francisco, CA.
- Howley, C.B. (1989). Synthesis of the effects of school and district size: What research says about achievement in small schools and school districts. *Journal of Rural and Small Schools*, 4 (1): 2-12.
- Howley, C.B. & Huang, G. (1991). Extracurricular participation and achievement: School size as possible mediator of SES influence among individual students. *Resources in Education*, January 1992.
- Interstate New Teacher Support and Assessment Consortium (INTASC) (1992). *Model standards for beginning teacher licensing and development: A resource for state dialogue*. Washington, DC: Council for Chief State School Officers.
- Kornhaber, M. & Gardner, H. (1993). *Varieties of excellence: Identifying and assessing children's talents*. New York: National Center for Restructuring Education, Schools, and Teaching, Teachers College, Columbia University.
- MacMillan, J. B. & Pendlebury, S. (1985). The Florida Performance Measurement System: A consideration. *Teachers College Record*, 87: 69-78.

Changing Conceptions of Teaching

- McKnight, C.C., Crosswhite, F.J., Dossey, J.A., Kifer, E., Swafford, S.O., Travers, K.J., & Cooney, T.J. (1987). *The underachieving curriculum: Assessing U.S. school mathematics from an international perspective*. Champaign, IL: Stipes Publishing.
- National Board for Professional Teaching Standards (NBPTS) (n.d.) *What teachers should know and be able to do*. Detroit, MI: NBPTS.
- National Institute of Education (1977). *Violent Schools—Safe Schools: The Safe School Report to Congress*. Washington, DC: National Institute of Education.
- Peterson, P. (1990). The California study of elementary mathematics. *Educational Evaluation and Policy Analysis*, 12: 257-262.
- Resnick, L. (1987). *Education and learning to think*. Washington, DC: National Academy Press.
- Schallock, D. (1979). Research on teacher selection. In D.C. Berliner (ed.), *Review of research in education*, Vol. 7. Washington, DC: American Educational Research Association.
- van Manen, M. (1984). Reflections on teacher experience and pedagogic competence. In E.C. Short (ed.), *Competence: Inquiries into its meaning and acquisition in educational settings*. Lanham, MD: University Press of America.
- Wilson, S. M. (1990). A conflict of interests: The case of Mark Black. *Educational Evaluation and Policy Analysis*, 12: 318.
- Wise, Arthur E. (1988, January). Legislated Learning Revisited. *Phi Delta Kappan*.