Shaping New Models for Early Childhood Teacher Education

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Young parents everywhere are asking questions about their children's education. Will their children have teachers who love them? Will their teachers take the time to discover the specialness of their child? Will their children experience too much pressure to read in kindergarten? Should they give their children, especially boys, an extra year of preschool before starting kindergarten? These and questions like them are on the minds of many young parents, and we, the teachers of those whom these young parents will meet as their children's first teachers are on the hook as never before to provide reassurance to them and to countless communities that their teachers and caregivers are of the highest quality – skilled, knowledgeable, caring, and dedicated. Finding ways to answer these questions is the focus of this paper.

In earlier work (see Meyers & Rust, 2008, Rust, 2009), I have taken up the critical dilemma that challenges every profession, that is, bridging research and practice; and I have proposed practitioner research – our students' and our own – as a viable bridge between research and practice. While I have not backed away from that proposal nor from my invitation to early childhood teacher educators to begin to gather data about the impact of our teacher education programs and about the impact of teacher education in general, in this paper, I hope to take us, in a related but different direction.

In this paper, I want to take us deeply into early childhood teacher education to examine the state of the field and the challenges that I think lie before us. As I do this, I want you to think about two questions: (1) What we as the National Association of Early Childhood Teacher Educators might do to answer the questions that many young parents have about their children's teachers, and 2) What we, as the National Association of Early Childhood Teacher Educators, might do to enable a powerful new consensus about the content, practice, and outcomes of early childhood teacher education. I'd like to see us begin to wrestle with what we can do individually and collectively to shift our practice as teacher educators so that our students, with our help, can initiate, implement, and sustain ways of working with young children that reflect what we have learned over the past 20 years about human development, the ways in which the brain works, and how one learns to

parse the world—all in settings that are good for children and for the adults who work with them.

Setting the Context for Change

Let me begin with a story that I told you last year as an example of what I mean by bridging research and practice: I gave an example drawn from a conversation I heard between Jim Hiebert (who along with James Stigler wrote the *Teaching Gap*, 1999) and a group of NYC teacher researchers (see Teachers Network Leadership Institute: teachersnetwork.org/tnli). Hiebert described having recently visited his doctor for his annual physical. As he left, the doctor said, "Jim, you're of an age that you need to begin to think 'heart healthy.'" "What is that?" Jim asked. The answer was, "A glass of orange juice, half an aspirin, and exercise every day." A month or two later, Jim was at a party for his dean who, a year before, had a major hear attack. "You look terrific," Jim said. "What are you doing?" The dean replied, "I'm seeing the best heart surgeon in Philadelphia." "And what has he told you to do?" Jim asked. "Drink a glass of orange juice, take half and aspirin, and get exercise every day," was the response. Hiebert's point in telling the story to the teachers is that we need to find in education the same capacity to share knowledge that has been developed in medicine so that the "expert," the researcher, and the general practitioner are working from and contributing to the same knowledge base. What Hiebert was getting at is that if we are going to shift the quality of practice and the kinds of questions that researchers ask, we need to keep research and practice so in synchrony with one another that practice is informed by research and research is informed by practice.

I am confident that the situation where researchers and practitioners are on the same page can prevail in early childhood education. But I think it has to begin with a reassessment of what we know about how teachers are made! I also think that any reassessment has to proceed from our taking such knowledge into systematic, thoughtful research of our own practice—research that we do and that we carefully share in settings like this with one another, research that pushes us toward thoughtful action.

Background Research on Teacher Education

I draw my remarks from a number of recent studies and reports (see Cochran Smith, 2003; Cochran Smith & Zeichner, 2005; Darling-Hammond & Bransford, 2005; Levine, 2005, 2006; Hiebert, Gallimore, & Stigler, 2002; Korthagen, & Kessels, 1999; Korthagen, Loughran, & Russell, 2006)—all of which suggest teacher education as a field in crisis and early childhood and early childhood teacher education as more vulnerable than any other in large part because most adults don't remember before 3rd grade and most think that working with young children is something any good hearted, patient person can do. I am hopeful about the future of early childhood

teacher education IF we, early childhood teacher educators, have the courage to seize the moment.

Reports on Teacher Education

With *Preparing teachers for a changing world,* Darling Hammond and Bransford (2005) have assembled a remarkable book that draws carefully on research and practice to support change in the field. Unlike Cochran Smith and Zeichner's (2005) *Studying teacher education,* the Darling Hammond and Bransford volume should be a core text for every teacher educator. Look especially at the chapters on human development, curriculum of teacher education, and assessment. Neither book, however, has any substantive focus on early childhood and the preparation of early childhood teachers and caregivers.

Levine (2005, 2006) set out to examine a set of programs generally offered by schools and colleges of education – educational administration, teacher education, educational research, and the education doctorate. His report on teacher education, *Educating School Teachers,* is only eleven pages long and nothing short of scathing. Like Cochran-Smith and Zeichner (2005), Levine finds that few programs stand up to any type of rigorous scrutiny. Levine recommends allowing alternative routes to teacher certification that could be especially helpful to career changers and offering greatest support to teacher education programs in doctoral level institutions. He writes,

> Too often teacher education programs cling to an outdated, historically flawed vision of teacher education that is at odds with a society remade by economic, demographic, technological, and global change. Equally troubling, the nation is deeply divided about how to reform teacher education to most effectively prepare teachers to meet today's new realities. (p. 1)

"In this rapidly changing environment," the report warns, "America's teacher education programs must demonstrate their relevance and their graduates' impact on student achievement—or face the very real danger that they will disappear" (3). Levine cites the following problems with teacher education:

> **Inadequate Preparation:** Many students seem to be graduating from teacher education programs without the skills and knowledge they need to be effective teachers. . . or to address the needs of students with disabilities (30 percent). A shockingly low percentage of principals said that their teachers were very or moderately well prepared to meet the needs of students from diverse cultural backgrounds (28 percent); to work with parents (21 percent); and to help students with limited English proficiency (16 percent). (pp. 3 & 4)

> **A Curriculum in Disarray:** Unlike law and medicine, in education there is no standard approach to preparing teachers. (p. 4)

Disconnected Faculty: While almost nine out of ten (88 percent) education school professors have taught in a school at some point in their careers, alumni and students complain that too often the experiences of faculty members were not recent or long enough. . . In addition to being disconnected from schools, faculty members remain disconnected from the rest of the university because their research is considered lacking in academic rigor by their faculty peers. (p. 4)

Low Admissions Standards: Universities use their teacher education programs as "cash cows," requiring them to generate revenue to fund more prestigious departments. This forces them to increase their enrollments and lower their admissions standards. Schools with low admissions standards also tend to have low graduation requirements. (p. 4)

Levine (2006) makes 5 recommendations:

ONE: that teacher education programs be seen as professional schools focused on school practice. (1) Just as medical schools are rooted in hospitals and law schools focus on the courts, the work of education schools should be grounded in the schools. (7)

TWO: The measure of a teacher education program's success (should be) how well the students taught by its graduates perform academically. (9)

THREE: Make five-year teacher education programs the norm. Teacher preparation programs should be designed as an enriched major rather than a watered-down version of the traditional undergraduate concentration. (10)

FOUR: Establish effective mechanisms for teacher education quality control. If teacher education is the Dodge City of the education world, teacher education accreditation bodies are weak sheriffs. It is time to rethink accreditation and to encourage the participation of top schools in developing standards and enforcement mechanisms. **N**ew accreditation standards should root measures of success in hard data on student achievement <u>and expand accreditation to include non-collegiate education programs offered by new providers</u>. (10)

FIVE: Close failing teacher education programs, strengthen promising ones, and expand excellent programs. <u>Create incentives for outstanding students and career changers to enter teacher education at doctoral universities</u>. (11)

Marilyn Cochran-Smith (2003) advocates the adoption of an inquiry stance on the part of teacher educators mirroring or modeling the approach to teaching and learning that their students should adopt.

Like Cochran Smith, Hiebert, Gallimore, and Stigler (2002) advocate an inquiry stance but they take it further to promote the development of something like lesson study (see Lewis and Tsuchida, 1998) in teacher education whereby you and I would study and share our experience with various teacher education practices—

thus, refining our practice over time as well as raising the level of practice across the field.

Fred Korthagen and his colleagues (see Korthagen, & Kessels, 1999; Korthagen, Loughran, & Russell, 2006) also tap into this inquiry mode but in a different way. They focus on ways of bringing preservice students' lived experience into their understandings of teaching and learning.

While none of these reports relates to early childhood teacher education, each of them has powerful implications for our work. Let's see why.

Where Teacher Education Fits in Teachers' Professional Development

Some of you will remember this diagram from last year (see Figure 1). It is the best way I can think of to describe a teaching life and to help me think through how to shape a teacher education program. The square represents the year or two or four that we have to work with perspective teachers. The time before it is what Lortie (1975) describes as the "apprenticeship of observation" for it is during this time that teachers form tacit understandings of schools, teachers, teaching, and learning by watching, listening, and experiencing teachers at work. The time after the box is the time that we currently recognize as the professional life of a teacher – the time after teacher preparation. Most of us have both implicitly and explicitly accepted this tripartite vision of teacher education and concentrated our attention on the box. In actuality, we now know that all three periods are essential to shaping a teaching life – to making a teacher.

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Figure 1: A Teacher's Life

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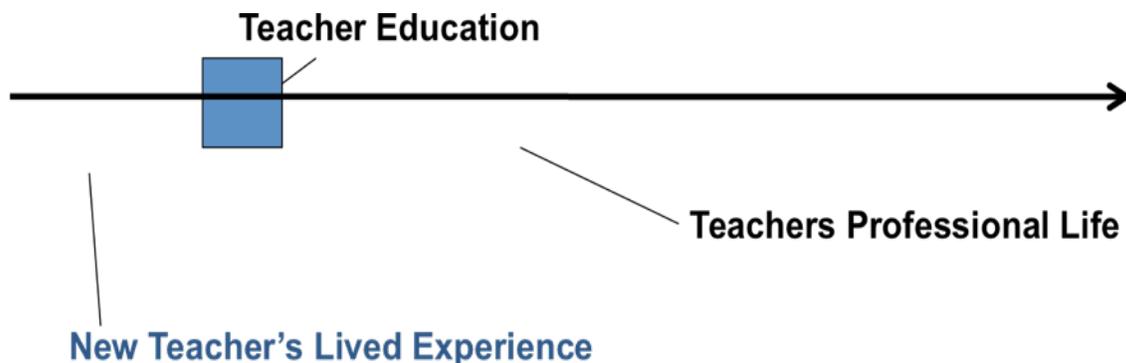
The Time Before Formal Teacher Education

The time before the square requires our attention. In many ways, this apprenticeship of observation is a surface observation of teaching. Kevin Ryan (1986) describes this as watching "the front stage behaviors of teaching." But, the apprenticeship of observation also represents a deep knowing of teaching for as Frances Fuller (1969), Paul Conway and Christopher Clark (2003), and Fred Korthagen and his colleagues (2006, 1999) have shown, the period prior to formal teacher education, the period that stretches from early childhood to college or graduate school accounts for a significant portion of a teacher's development, and the images of teaching developed during this time affect teachers' actions subsequent to their formal teacher education.   It is this complex interplay of surface and depth that should become the first marker in any effort to bring research and practice together in teacher education.

If we accept the argument that the during the time before teachers enter the field, they have already formed very clear images of what a teacher does, what are implications for the preparation of early childhood teachers? Think about it -- what if all or most of the images of schooling that our students have internalized have nothing to do with the field they are about to enter?   What if they only have very dim memories of the time before 3rd grade? What if the major image of teaching that they hold is of teachers occupying the center of attention and learners moving in unison? What does this mean for young children each of whom needs individual attention? What does it mean for the way learning environments are set up? What does it imply about the ways in which early childhood teachers are prepared? David Berliner (1986) claims that it takes 10 years to develop an expert teacher. Does the apprenticeship of observation figure in this professional development? How?

Making A Teacher

To help us think about how teacher education might be organized in ways that enable the answering of these questions, I want to turn now to the work of Malcolm Gladwell. Galdwell, you may remember, is the author of *The Tipping Point*, a discussion of what he describes as social epidemics and *Blink*, a discussion of how the expert eye recognizes fake and masterpiece. In *Outliers,* Gladwell (2008) claims that exceptionality in any field is developed over time specifically, 10,000 hours of practice (that's 417 twenty-four hour days), that it is developed in a supportive environment, and that the long and intense practice of the 10,000 hours is relevant and intensely meaningful to the learner. Throughout the book, Gladwell gives many examples but the long and short of it is something you already know: when people practice something that they want to get better at, even only for a short time, and they get positive feedback for their developing skill, their skill will improve.

Now, let's think of teacher education in the context of Gladwell's thesis. The 10,000 hours of observational apprenticeship that our students have had bear no relationship to what we expect of them as they work with young children. They may have watched early childhood teachers; they may have worked with young children

as baby sitters; they may even have helped to raise younger siblings. But actual deep, conscientious practice – highly unlikely – and certainly not 10,000 hours. Thus, when it comes to preparing teachers for early childhood (and early elementary schooling), we need to understand that preservice teachers have little deep personal experiential knowledge to draw on.

So, here are the first challenges for teacher educators:

1. We need to find ways to help our students engage in an explicit examination of their assumptions about teaching and learning as well as of their images of the role of the teacher.

2. We need to recognize that in teacher education, we are merely helping our students <u>begin</u> a new 10,000 hours of practice.

But thinking of our teacher education programs as beginning a new 10,000 hours implies challenges. We need to recognize and think through the past, contemplate the possibilities for a new present, and move ourselves to action (action that Gladwell would describe as action focused around meaningful work and pursued in community).

Currently, teacher education is considered by many to be

- **Bounded by time** – a year, two years, 4 years

- **Circumscribed by**

   o custom – we often teach as we were taught. We break up our programs into courses as in other parts of colleges and universities

   o a dearth of resources – Early Childhood programs often have fewer resources than other education programs and than other programs across the university

   o the reward system of the university -- Rewards go to publication and grant winning, not to teaching and program development

- **Not connected to the real world of schools:** placements are often brief; sites are chosen to accommodate faculty and students' comforts rather than to challenge tacit images; there is often little supervision and it is often of poor quality and rarely in genuine synchrony with the teacher education program; the activities in which preservice teachers engage are rarely relevant to their subsequent professional practice;

- **Irrelevan**t : Theory that is taught does not transfer to practice. The practice of teacher education is inconsistent with new knowledge about how the brain works and how we learn (Bransford, Brown, & Cocking, 1999).

Further, teacher education programs routinely fail to draw on teachers' tacitly held images. We often begin with preservice teachers as if they arrive in our programs *de novo* rather than acknowledging that they bring and use their apprenticeships of observation as a means of apprehending new approaches to teaching and learning (Korthagen & Kessels, 1999; Korthagen, et al. 2006). In the end, then, teacher educators have little evidence to demonstrate the impact and long-term value of teacher education.

What if we, early childhood teacher educators, took each of these topics and developed action plans around them? What might be the impact beyond the teacher education program?

Developing New Models of Early Childhood Teacher Education

To make teacher education powerful in the personal and professional life of a teacher, we need to blur the boundaries of the square that is traditional teacher education by changing the ways in which teachers are prepared for the profession and supported over the course of their professional lives. These new ways must draw on what we currently understand about how adults and children learn. These new ways should draw on teachers' prior knowledge and should enable preservice teachers to test their ideas and construct new conceptual understandings in the context of practice.

Research and experience around professional development for teachers shows that the effective professional development must be active, collaborative, embedded in a classroom context, and part of a school culture (see Lieberman & Miller, 2001; Little & McLaughlin, 1993; Little, 2007). But what does effective professional development look like at the early childhood level?

In his remarkable book, *Experience and Education*, Dewey (1938) describes the ultimate work of the teacher as being able to participate in a seamless way in "the soul life" of the classroom. This means achieving a kind of oneness with one's students, being able to read beneath the surface of a question, being able to engender a deep respectfulness between and among teachers and students. In early childhood preparation, moving prospective teachers/caregivers toward this kind of deep knowing is fraught with difficulty – in large part because of the 3rd grade memory point but also because the standard of teacher education practice in our field is more in synchrony with the culture of higher education than it is with the culture of the early childhood classroom.

For many of us, the preparation of new early childhood practitioners is carried on in the college or university classroom sometimes in a lecture format, often in workshop format but rarely <u>within</u> the context of an early childhood setting. True there may be an element of observation and there will almost always be a practicum, but how often do we

1) make our use of space and time capture the essence of the environment into which our students will go?

2) or equally important in the latter stages of preparation, embed our instruction in actual autonomous practice on the part of the individual preservice student?

Further, if the teachers whom we are preparing only come to understand early childhood classrooms in the short period that most have for student teaching, how can they come to know that soul life that Dewey describes?   How will they come to the point of being able to hear the authenticity and depth of children's questions? And finally, if, as Berliner (1986) suggests, it takes ten years to really become a teacher, how can we maximize the impact of preservice teacher education in this process?

I propose that we reshape, reconstruct the preparation of early childhood professionals and that we do this in ways that enable us to see the impact of our work in both the short and long term.

Developing the Edge

To begin with, finding ways to maximize the impact of preservice education requires that we, as teacher educators, revise our understanding of teachers' professional development from the small moment of formal teacher education, to the continuum that begins with individual teachers' first experiences of schooling and continues throughout their professional lives.   Capturing tacit assumptions and beliefs formed during the apprenticeship of observation is critical and not easily done in the traditional teacher education context that is far removed from everyday life of schools and childcare settings.   What is needed is a deep connection with educational settings outside of the university.

Developing relationships with schools and other agencies outside of the teacher education program calls for a new conception of these relationships.   To get a sense of such environments, I turn now to the remarkable work going on in Israel by Malka Gorodetsky and her colleagues and in Europe by Etienne Wenger around the notion of edge communities (Gorodetsky, Barak, and Harai, 2007), peripheral communities of practice (Wenger, 1998; Wenger & Snyder, 2000), or what Zeichner (unpublished) describes as a "third space".

Edge environments, writes Gorodetsky, Barak, and Harai,(2007) are

> transitional environments that are known for their resilient, dynamic nature in coping with change and productivity (Odum, 1971) as well as for their richness and diversity. This is because they are inclusive of both the original core features and the new ones that emerge in these settings (Turner, Davidson-Hunt, and O'Glaherty, 2003). They are not part of the major activities of either institution—neither that of the school nor of the teacher education program. Instead, they are peripheral to both initiating institutions with their own identity that incorporates many of the advantages that are characteristic of ecological and cultural edge environments. (p. 102)

In the world of ecological science, edge environments are "tender" zones—places that are easily affected by change in the original environments from which they draw their liveliness. In the world of social organizations—companies, schools, universities, churches—edge environments are equally "tender." They require flexibility from leadership both within and outside of the edge environment (see Wenger, 1998; Wenger & Snyder, 2000). But, like their ecological counterparts, as both Gorodetsky and Wenger show, edge environments are places where strong, new, creative communities can emerge and flourish giving support to the original communities from which they emerged and providing a place for the testing of new ideas and new forms of organization and relationship. Such communities could provide what Zeichner (unpublished) describes as a much needed "third space" and thereby enable substantive, far-reaching, and much needed change in teacher education.

Gorodetsky, Barak, and Harai,(2007) describe the formation and institutionalization of what they describe as "an edge community of practice" (p. 100). Theirs is a collaboration between an innovative teacher education program and an experimental comprehensive high school. "This community," they write, "is a dynamic community that is continuing to change at present and exerts its influence on the professional lives of both collaborative institutions" (p. 100). This is exactly the type of new existential space that Zeichner (unpublished) claims is needed if teacher education is to continue:

> There is a great deal of impatience with colleges and universities across the country for what is perceived to be our unwillingness to change and work with schools and communities in closer and more respectful ways across teachers' careers (e.g., Hartocoltis, 2003). Despite the complexity of bringing this new epistemology of teacher education into the mainstream, unless we are able to do so relatively soon, college and university-based teacher education may be replaced as the main source of teachers for the nation's public schools. (p. 19)

Teacher educators embracing a broader conception of their work must become adept at moving between these communities both retaining the scholarly discipline required by the university and embracing the discipline of practice that is essential to effective teaching in school and child care environments. Like all scholars, they must be knowledgeable about their field—here, teaching and learning. They must be inquirers—investigators of their own practice. They must be committed to working from research to practice, to looking at whether and how their research and that of colleagues across the field is evident in their practice (see documentation of their effort to upgrade elementary mathematics education at the University of Delaware by Berk & Hiebert, in press,). This requires commitment to working within a community of learners like that described by Gorodetsky and colleagues (2007). Finally, as Hiebert, Gallimore, and Stigler (2002) suggest, teacher educators must be committed to sharing their work broadly, that is, to making their research and practice, "public, storable and sharable, and open for

verification and improvement" (pp. 6-8). These elements should be so much a part of our practice as teacher educators that our students will come to see them as critical elements of their practice. In essence, we need to model the practice we want our students to incorporate into theirs.

Toward Developing New Models of Teacher Education

As I said at the beginning of this paper, teacher education is in real jeopardy and early childhood teacher education may be more than any other field. However, I am not without hope. I have always believed that early childhood education could and should provide the path for education at all levels. So, if any of what I have said today resonates with you, I hope you will take up the challenge to imagine and craft new models of early childhood teacher education.

To that end, I would like to propose an action plan for the members of NAECTE: I'd like to see us begin this morning to craft an agenda for a series of planning conferences that would begin today and continue for the next several meetings, resulting each time in a furtherance of an agenda for early childhood teacher education. Here I draw on the model provided by the MOFET Institute in Israel—"a national center for the research and development of programs in teacher education and teaching in the colleges. The Institute constitutes a unique framework in Israel and worldwide for preparing teacher educators and supporting their professional development" (p. 7).

What I'd like to see us begin with today are one or two questions that each of us will take back with us to our places of work.   They could be questions about those commonplaces with which all of us contend:

- time—How much time do our students actually spend in experimenting with the pedagogy of early childhood?

- Routines/customs/comforts—What aspects of our programs surface in the first months of teaching, in the first years, later?   How do we know?

- Connections – Where in our programs do our students draw on their apprenticeships of observation?

- Relevance – How do we know that our programs really prepare our students for their work in the field?

- Evidence – What claims can we make about our programs? About the power of teacher education?

Let's see if in the next year or two, we can't begin to discern what works in our programs, share it with one another, and in so doing, begin with confidence to make claims about the impact of our work in both the short and long term, and thereby, change what takes place in schools and child care settings for all of our children.

References

Berk, D. & Hiebert, J. (in press). Improving the mathematics preparation of elementary teachers, one lesson at a time. *Teachers and Teaching-Theory and Practice, 15*(3).

Berliner, D. (1986). In pursuit of the expert pedagogue. *Educational Researcher, 15*(7), 5-13.

Cochran Smith, M. (2003) -- Learning and unlearning: The education of teacher educators. *Teaching and Teacher Education, 19*(1), 5-28.

Cochran Smith, M., & Zeichner, K., (Eds.) (2005). *Studying teacher education.* New York: Routledge.

Conway, P. F., & Clark, C. M. (2003).   The journey inward and outward: A reexamination of Fuller's concerns-based model of teacher development. *Teaching and Teacher Education, 19(5*), 465-482.

Darling-Hammond, L. & Bransford, J. (2005). *Preparing teachers for a changing world. What teachers should learn and be able to do.* San Francisco: Jossey-Bass.

Dewey, J. (1938). *Experience and education.* New York: Macmillan.

Fuller, F. (1969). Concerns of teachers: A developmental conceptualization. *American Education Research Journal, 6*(2), 207-226.

Gladwell, M. (2008). *Outliers. The story of success.* New York: Little, Brown, & Co.

Gorodetsky, M., Barak, J., & Harai, H. (2007). A cultural ecological edge: A model for a collaborative community of practice. In M. Zellermayer, & E. Munthe, Eds., *Teachers in learning communities. International perspectives,* pp. 99-111.

Hartocoltis, A. (July 31, 2003). Who needs education schools? *New York Times (Education Life).* Pp. 24-28.

Hiebert, J., Gallimore, & Stigler, J. (2002). A knowledge base for the teaching profession: What would it look like and how can we get one?

Korthagen, F. A. & Kessels, J. P. A. M.,. (1999). Linking theory and practice: Changing the pedagogy of teacher education. *Educational Researcher, 28*(3), 4-17.

Korthagen, F., Loughran, J., & Russell. T. (2006). Developing fundamental principles for teacher education. *Teaching and Teacher Education, 22*(4), 1020–1041.

Levine, A. (2005). *Educating School Leaders.*   The Education Schools Project. Accessed June 7, 2009 on the web at http://www.edschools.org/pdf/Final313.pdf

Levine, A. (2006). *Educating School Teachers.* The Education Schools Project.
 Accessed June 7, 2009 on the web at
 http://www.edschools.org/teacher_report.htm

Lewis, C., & Tsuchida, I. (1998). A lesson is like a swiftly flowing river: How research
 lessons improve Japanese education. *American Educator, 22*(4), 12-17, 50-52.

Lieberman, A., & Miller, L. (2001). *Teachers caught in action: Professional
 development that matters.* New York: Teachers College.

Little, J. W. (2006). *Professional Community and Professional Development in the
 Learning-Centered School.* Washington, DC: National Education Association.

Little, J. W. (2007). Teachers' accounts of classroom experience as a resource for
 professional learning and instructional decision making. In P. A. Moss (ed.)
 *Evidence and decision making. The 106th Yearbook of the National Society for the
 study of Education. Part I,* pp. 217-241. Malden, MA: Blackwell.

Little, J. W. & McLaughlin, M. W. (1993). *Teachers' work. Individuals, colleagues, and
 contexts.* New York: Teachers College

Lortie, D. C. (1975). *Schoolteacher; a sociological study.* Chicago: University of
 Chicago.

Meyers, E., & Rust, F. (Eds.). (2008). *The missing link--Connecting teacher research,
 practice & policy to improve student learning.* New York: Teachers Network.
 (Supported by a grant from the Spenser Foundation).

MOFET Institute. (2008). *The MOFET Institute. MOFET International.* Tel Aviv:
 MOFET.

Odum, E. P. (1971). *Fundamentals of ecology,* 3rd edition. Philadelphia, PA: W. B.
 Sanders.

Rust, F. O'C. (2009). Teacher research and the problem of practice. *Teachers College
 Record, 111* (8), p. 3-4 http://www.tcrecord.org ID Number: 15506, Date
 Accessed: 2/16/2009 11:44:26 AM

Rust, F., Peterman, F., & Storz, M. (2008). Using students' voices to change teaching
 and learning to teach in urban schools: Studies from three teacher education
 programs. In J. A. Kentel & A. Short (Eds.), *Totems and taboos. Risk and
 relevance in research on teachers and teaching,* pp. 59-66. Rotterdam: Sense
 Publishers.

Stigler, J., & Hiebert, J. (1999). *The teaching gap.* New York: Free Press.

Turner, N. J., Davidson-Hunt, I. J., & O'Glaherty, M. (2003). Living on the edge:
 Ecological and cultural edges as sources of diversity for social-ecological
 resilience. *Human Ecology, 31*(3), 439-461.

Ryan, K. (1986). *Lives of first year teachers.* Paper presented at the annual meeting of the American Association of Teacher Educators, Washington, DC.

Wenger, E. (1998). *Communities of practice.* Cambridge: Cambridge University.

Wenger, E. C., & Snyder, W. M. (2000).   Communities of practice: The organizational frontier. *Harvard Business Review.* Reprint #R00110. Accessed on the Web July 23, 2006.

Zeichner, K. (unpublished). *Rethinking the connections between campus courses and field experiences of university –based teacher education.*