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Magdalene Lampert¹

In talk about teacher preparation and professional development, we often hear the word *practice* associated with what, how, or when the learning of teaching is supposed to happen. In this article, four different conceptions of practice are investigated, and their implications for how learning teaching might be organized are explored. Rather than a comprehensive review of the literature, what is presented here is a set of ideas that draw on both past and present efforts at reform. The purpose of this essay is to provoke clarification of what we mean when we talk about practice in relation to learning teaching. The author draws on her own research on the work of teaching from the perspective of practice to represent the nature of the work and to speculate from various perspectives on how that work might be learned.

Keywords

teaching, practice, teacher education, professional development

In talk about teacher preparation and professional development, we often hear the word *practice* associated with what, how, or when learning the work of teaching is supposed to happen. Listening in on those conversations, and reading what has been written about teacher education, one can distinguish several different uses of the term. In this article, I analyze the various interpretations that could underlie the link between *practice* and learning teaching, consider some common usages of the term in and outside conversations about teaching, and take a brief look at how different concepts of practice might play out in designs for learning teaching. I examine learning *teaching* rather than learning *to teach* because the infinitive form can suggest that the action is to occur in the future, after something is learned, while the form *teaching* allows us to hold out the possibility that learning also occurs while doing the work. To begin, I briefly describe the work of teaching and assume that *learning* is whatever one does to get better at that work. I will explore different meanings of *practice* and the different implications each has for how one learns or gets better at the work of teaching. Although it is not possible to avoid entirely considerations of how knowledge plays into learning the work of teaching, I will not review the many arguments about what knowledge teachers need or have or theories about how such knowledge is acquired. My question is not how one learns knowledge or what knowledge is most important, but what *practice* can mean in relation to learning the work of teaching.

Nothing in this essay will be new to everyone. Its purpose is not to report on novel work or to present a comprehensive review of different literatures but to get us talking more precisely about what we mean when we talk about practice in relation to learning teaching. In some cases, I reduce ideas that have received much more sophisticated attention in the

literature to their simplest terms in an effort to get us to look at them from a new perspective. I meander through contemporary and historical ideas about teacher education and professional development, drawing on the literature somewhat eclectically to illustrate important conceptual distinctions. When it seems helpful, I use ideas from other fields to illuminate or question long-standing assumptions.

The Work of Teaching

What is it that is to be learned when one is learning teaching? Teaching can mean many things. In teacher education, we are particularly concerned with teaching that occurs in school classrooms, where the work entails responsibility for whole classes of students compelled to work together for 9 months at a time. Based on a multiyear research project, I have developed a comprehensive representation of the work of classroom teaching as managing problems in several domains of work while maintaining productive relationships with students and content (Lampert, 2001). I will briefly summarize key elements of that representation here as a backdrop for the investigation of what *practice* might mean in relation to learning teaching. Teacher educators and scholars in the field of teacher learning have found this representation useful in “decomposing” and naming aspects of teaching while maintaining its complexity (Grossman, Hammerness, & McDonald, 2009; Grossman & McDonald, 2008).

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Classroom teaching is relational work: Working on learning in the classroom involves concerted action by at least two people, the teacher and a student. Although student learning can be accomplished without actions taken by teachers, simply by a relationship between the student and that which is to be learned, the work we attend to here—teaching in school—necessarily involves intellectual and social collaboration. To do their job, classroom teachers need to act deliberately to maintain productive relationships with particular individual students in ways that result in those students learning. The fundamental importance of this collaboration to the work of teaching has important implications for how the work might be learned. For example, it leads us to ask: If teaching is work that must be done in relationships with particular students, must it be learned together with those students?

Besides working with students, teachers need to work in relation to the particular subject matter that students are responsible for learning. Although students need to study in order to learn the subject matter, in school it is the teacher's job to make it likely that this will happen and happen productively. So teachers need to work with the subject matter to understand it, plan lessons around it, represent it, demonstrate it, and explain it. Again, there are implications for learning the work. Can teaching be learned without regard to the particular subject matter that teachers are responsible for making available to students?

Multiple kinds of problems arise in establishing and maintaining relationships with students and subject matter, and the work that must be done to solve them is socially and intellectually complex. It occurs in varying units of time and in varying interpersonal arrangements. The teaching problems that arise in relationships with content and with students are solved in particular moments of interaction, in parts of a lesson, and at the larger scale of the lesson as a whole. And the classroom teacher builds relationships with students around content, not only in single lessons but also across groups of lessons, ranging from a pair of lessons connected across 2 days to the totality of all lessons across the year. Because teachers' relationships with students and with content are ongoing in this way, every teaching act is simultaneously part of a momentary exchange, part of a group of similarly structured exchanges, part of a lesson, part of a unit of lessons, and part of the yearlong relationship between teacher and students. To add to the complexity, there are no clear boundaries to be observed that mark when one time unit stops and the next one begins. Temporal boundaries of teaching events are hard to draw because time units overlap with units of social organization. This too has implications for learning the work of teaching: how is it divided into pieces for novices to study? Should they study *teaching moves* that are moments of interaction? Should they study instruction in terms of the *unit*, which could last a month or so? Or is the *lesson* the phenomenon that should organize preparation for doing the work?

The teacher–student relationship is fundamental to the work of teaching, but students do not present themselves in

the classroom only as individuals. They are there as members of stable and dynamic groups, and they interact in those groups around learning content. The groups might be friends or enemies, English speaking or non–English speaking, enthusiastic or bored. Teachers teach students as members of such groups, and they teach them as individuals at the same time, and always in the presence of the class as a whole. The teacher's relationships with content are constructed differently in relationships with different students and different groups of students. Each different kind of social connection between teacher and students (pairs, groups, class) simultaneously carries with it different intellectual content as well as different interpersonal challenges. The matter of social connections is perhaps the most difficult to sort out in preparing for the work of teaching. Can one learn to make the kinds of social connections teachers need to make over time when one is only an observer of or at most an apprentice to the teacher of record?

Teachers work on the problems involved in establishing and maintaining intellectual and social relationships with students and content by arranging the furniture and the schedule, planning lessons, working with students while students work independently or in small groups, instructing the whole class at once, linking lessons over time, covering the curriculum, motivating students to do what needs to be done to learn, assessing whether progress is being made, managing diversity of all sorts, and finally bringing the year to a close. Can these parts of teaching be learned in the abstract, as separate skills? Or does learning them depend on trying to do them with particular children in particular circumstances?

Conceptions of Practice

Problems with learning the work of teaching are often stated in terms of the connection—or disconnection—between teacher education and some conception of practice. In different statements of this problem, practice means different things. Recent examples from writing by leaders in the field abound:

If teachers' professional learning could be situated in the sorts of *practice* that reformers wish to encourage, it could become a key element in a curriculum of professional development. A *practice*-based curriculum could be compelling for teachers and would help them improve students' learning. (Ball & Cohen, 1999, p. 6, emphasis added)

“Sink or swim” induction encourages novices to stick to whatever *practices* enable them to survive whether or not they represent “best” *practice* in that situation. (Feiman-Nemser, 2001, p. 1014, emphasis added)

Education schools need to embrace the reality that they are professional schools and refocus their work on

the world of *practice* and practitioners. It is the only way they can become both excellent and useful. (Levine, 2006, p. 104, emphasis added)

Whereas teachers may encounter many different kinds of opportunities to observe and learn from the *practice* of others throughout their careers, many novice teachers who take part in formal teacher education programs participate in field placements and internships designed to help them learn from the *practice* of more experienced teachers. Despite the potential benefits of such arrangements, the nature and quality of the teaching that can be observed in these settings vary widely, and teacher educators have relatively little control over what novice teachers observe and learn in these arrangements. In turn, teacher educators have limited opportunities to see and study the same *practice* that their preservice students do. (Hatch & Grossman, 2009, p. 73, emphasis added)

Initial teacher preparation must help novices learn how to *do* instruction, not just hear and talk about it; yet there is often more emphasis on tools for *practice* than on *practice* itself. (Ball, Sleep, Boerst, & Bass, 2009, p. 459, emphasis added)

What is meant by *practice* in each of these assertions about problems in learning teaching? In the first argument, practice seems to be an ideal that exists in the mind of reformers and maybe in the work of a few practitioners, while at the same time, it seems possible to organize the curriculum of preparation around it. In the second, practices are not the best things for novices to do, but they are things that they know how to do in order to survive, and one wonders how they learn to do them. Looking across the two arguments, it seems to make a difference to the meaning whether one uses the singular form or the plural form of the word *practice*. In the third statement, a “world of practice” is implied that is inhabited by practitioners who are somehow culturally different from the people in professional schools. In the next statement, “teaching practice” has a kind of global quality, and it is something that belongs to individual teachers, from whom novices can learn it. In the last statement, a distinction is made between learning “tools of practice” and learning “practice itself.” Again, the quality of the word is global, but practice seems to belong to a collective rather than to an individual. One could conclude from this statement that practice itself is about using tools, rather than simply knowing they exist, implying that the work of preparation must be about both introducing the tools that the collective uses and teaching their proper use. How might any particular meaning here be linked with the way the learning of teaching should be organized? Should it be structured individually or collectively? In particular settings or in general

terms? Focused on the real or on the ideal? These knotty questions are all buried in the various uses of the word *practice* across these and many other statements about learning teaching.

Practice as That Which Contrasts With Theory

Probably the most common way in which the word *practice* is used in relation to the learning of teaching is to contrast it with theory or research. In this usage, it means what people do rather than what they think or know. It is always a noun, and it doesn't work to use it in the plural; it usually refers to anything that is not theory or research. In the dictionary,¹ in this usage, practice is defined as “the active practical aspect as considered in contrast to or as the realization of the theoretical aspect.” Practice is the process of actively carrying out an idea as distinct from the process of having an idea. This definition suggests a linear relationship: one gets or has an idea, and then realizes it; one learns or articulates a theory, then uses or applies it. It also suggests a possible division of labor: One person could have an idea or theory, and someone else could apply it “in practice.” This dichotomy between theory as thinking and practice as action has been associated with the Cartesian dualism between mind and body.

The work of making relationships with students and enabling their productive study of subject matter certainly requires action on the part of the teacher. There are no doubt thousands of theories and even more informal ideas about how to make those relationships productive. In making relationships with students, teachers are people engaged in making personal connections with individual people. In doing so, with the aim of making subject matter available for study, the teacher is certainly using both mind and body—if indeed those are accepted as separate entities. From the perspective of what we know about the work of teaching, this common understanding of practice as separate from theory does not seem applicable.

That said, it must be acknowledged that links between the theory-practice distinction and the problem of learning teaching are common. In ordinary talk about their own learning, for example, novice teachers complain that professional preparation courses deliver too much theory and not enough practice. Veterans claim that they learn everything important from their own practice in their own classrooms, and what they learn in professional development may be “good in theory” but too general to really “apply” to meeting their particular students' needs. Scholars also embrace the dichotomy: David Carr (1992) started his philosophical analysis of what is wrong with teacher education with this radical assertion:

Let us begin with a very large note of agreement with the severest critics of educational theorising and its role in teacher preparation—that education and teaching are, to be sure, matters of practice more than theory.

In fact, I think that it is quite essential to grasp for a proper understanding of these issues that education as a practical activity is in a very real and crucial sense opposed to theory. (p. 242)

Not only philosophers separate theory and practice. Empirical scholars do it as well in analyzing their findings about problems in learning teaching. For example, in a broad-ranging and widely cited review of studies of learning to teach, Wideen, Mayer-Smith, and Moon (1998) concluded that “virtually all the studies we reviewed were conducted within the theory and practice setting of [the] traditional model of teacher education,” where “the university provides the theory, skills, and knowledge about teaching through coursework; the school provides the field setting where such knowledge is applied and practiced; and the beginning teacher provides the individual effort that integrates it all” (p. 160). This course work–fieldwork division in learning teaching is said to persist, despite the proliferation of different “pathways” into teaching (Boyd et al., in press).

Outcomes of learning teaching as well as programs are characterized in terms of the theory–practice dichotomy. Kennedy (1999) and her colleagues in the Teacher Education and Learning to Teach study followed more than 100 teachers in nine differently structured programs and observed that they uniformly faced a “problem of enactment.” The responsibility for “integrating it all” that Wideen et al. (1998) saw as the responsibility of the individual learner of teaching was found in the Teacher Education and Learning to Teach study to be overwhelming to novices. In their field placements, across programs, novices were observed to struggle with what they could actually do with the ideas they learned in their courses, even when they were teaching concurrently with those courses and the courses were held in a school. To focus learning teaching substantively on practice, Kennedy (1999) advocated that teacher educators work on developing “*situated knowledge*, meaning knowledge that is understood through specific situations rather than, or in addition to, knowledge that is understood abstractly” (p. 71). The term *enactment* as a proxy for adding attention to practice to more academic work in learning teaching comes up again in a current critique by Grossman, Hammerness, and McDonald (2009), who argue that “taking clinical practice seriously will require us to add pedagogies of enactment to our existing repertoire of pedagogies of reflection and investigation” (p. 274). If teaching is enacted in relationship with students and subject matter, then learning teaching practice in the sense of learning enactment would mean learning *with* students and *with* subject matter; enacting teaching to learn to do it would be a long-term proposition, rather than something that lasts a few weeks; and teaching moves, or the parts of the work that add up to a whole, would be hard to separate out, except “in theory.”

A recent report on the problem of learning teaching by the National Academy of Education (Hammerness et al., 2005)

echoes Kennedy’s (1999) concern about courses producing “inert knowledge” rather than knowledge that can be used in action (p. 372). The report argues that teaching requires “adaptive expertise,” a kind of competency that involves being fluent with routines in order to work efficiently and innovate when necessary, rethinking key ideas, practices, and values in order to respond to nonroutine inputs. An example would be the work of calling on students. Learning a routine for doing this work would enable a kind of fluency in a regular activity such as checking homework, but teachers would also need to be prepared to adapt to what they are learning on the spot about the degree to which an assignment has challenged students’ abilities. This interactive view of practice does not eschew the importance of theory: “‘Application’ and ‘innovation’ are tightly intertwined and need to be learned together, in the context of a schema that provides a means for reflection and further learning” (Hammerness et al., 2005, p. 374). Others have referred to this kind of schema as a “theory-in-action” (Schön, 1983) and have analyzed how it operates in “the generative dance between knowledge and knowing” where “knowing refers to the epistemic work that is done as part of action or practice, like that done in the actual riding of a bicycle or the actual making of a medical diagnosis” (Cook, & Brown, 1999, p. 387).

Often the argument is made that the theory–practice divide exists because the situations in which use and application are supposed to occur are particular and different from one another. Thus practice becomes linked with the concept of the teacher as an independent artisan who must create his or her own techniques (Huberman, 1993). Artisanal work is context bound and implicit, and from this perspective, practice or enactment is the purview of individuals. The assumed implication for learning teaching is straightforward and long-standing:

“Artisans do not detain their apprentices with theories, but set them to do practical work at an early stage; thus they learn to forge by forging, to carve by carving, to paint by painting, and to dance by dancing” and, by extension, to teach by teaching. (Comenius, 1657, as cited in Norris, 2000, p. 173)

In this view of practice, the learning of teaching practice is something one does by oneself while doing the work.

Taking an artisanal perspective on the work of teaching would be a challenge for the development of what Grossman and McDonald (2008) called “pedagogies of enactment” in teacher education, for if practice is learned idiosyncratically by each individual, such pedagogies would have teacher educators working with learners of teaching on a one-to-one basis. Writing in this journal, Richard Wisniewski (1982), then dean of education at the University of Tennessee, resolved this problem by envisioning teacher educators as masters working with apprentices on enactment the way

physicians work with medical interns during “rounds.” He asserted that to solve the problem of learning teaching,

The program in a true professional school would be clinically-based and the theory-practice gap would be systematically attacked. . . . Ideally, courses as we know them would be obsolete in a true professional school. In their place, competencies blending theory and clinical practice requisite to teaching would be practiced daily on and off campus by professors and their students A professor of education would make regular rounds, visiting selected schools and projects each week. The analogy here is to a physician making rounds in hospitals and demonstrating skills to interns. (pp. 3-4)

This proposal of Wisniewski’s raises interesting questions about the kind of work that would be entailed in being a professor of education. Like Kennedy’s (1999) proposal to attend to theory in a way that is situated in practice and Grossman and McDonald’s (2008) emphasis on complementing pedagogies of investigation with pedagogies of enactment, it suggests that those who do this work would be more in touch with practice than typical university professors would be and more in touch with theory and the work of analyzing teaching than typical school teachers in field sites would be. It also points toward another way in which “practice” is used in relation to learning teaching, to which I now turn.

Teaching as a Collection of Practices

While arguing that teacher education should include “pedagogies of enactment,” Grossman et al. (2009) do *not* advocate that learning teaching should take the form of an apprenticeship in which one novice works with one experienced teacher who functions as a teacher educator. They suggest a design based on practice, but they give it another meaning, using the term in the plural and proposing that “teacher education be organized around a core set of *practices* for teaching that novices are helped to develop during professional education” (p. 274). In this usage, the dictionary defines a practice as “a habitual way or mode of acting; a habit, custom; something done constantly or usually; a habitual action.” Like practice in contrast to theory, this use of the word *practice* implies things that people do, constantly and habitually. Considering the nature of teaching as relational work in which the teacher establishes and maintains connections of various sorts with students and subject matters during a 9-month school year (Lampert, 2001), it makes sense to see what he or she is doing in terms of the development of habits and customs. Though it is not the intellectual essence of teaching, a fundamental part of the work is keeping order among a large group of children or adolescents, a task that requires regularizing or “habitualizing” the way

time and space are used, who talks when, and how one gets access to the materials necessary for participation. The intellectual connections that need to be developed also depend on regularity or habit. Teachers need, for example, to establish common meanings for the words that are used in classroom discussions and for the graphic representations of central concepts that are displayed on the board so that students use them habitually rather than idiosyncratically. This sense in which the word *practice* is used to mean something like routine does seem helpful to understanding the problems of learning teaching from the perspective of what it takes to do the work.

The central question raised by the contemporary use of *practices* in relation to learning teaching is, Which practices should be the focus of that learning? One line of thinking about this question uses the term *best practices*, borrowed from the business world to refer to a set of techniques for most efficiently and effectively producing a desired outcome. In business, the desired outcome is more easily specified than in education, because increased productivity is related to increased profits. When educators use the term *best practices*, another question immediately follows: best to achieve what goal? The arguments are familiar: Is our goal to keep students in school until they are 17 or to teach them to read? Does reading mean decoding, or comprehension, or an appreciation of literature? The best practices for teachers to do would, of course, depend on how these questions were answered. And within these answers, there is another question: best according to what evidence?

In the literature on teacher education reform in the 1970s and 1980s, the practices that were considered important to learn for teaching were referred to as *competencies*. The idea was that the teacher’s role could be broken down into discrete units called *competency statements*, that each unit could be defined as an observable behavior, and furthermore, that each unit could be taught to prospective teachers independent of the other units (Kennedy, 1987). In describing the structure of competency-based teacher education as it was enacted at the University of Texas, for example, Houston and Jones (1974) asserted that “competency statements are derived from the role of the practicing professional, explicitly stating what the learner [of teaching] is to demonstrate for successful completion of the program” (p. 7). They argued that an ideal way to organize the learning of teaching within such a program would be for a faculty member to work with a few doctoral students and a few classroom teachers and as many as 100 children, with each prospective teacher tutoring 1 or 2 students to practice or demonstrate competencies. The idea that what new teachers need to learn could be “derived from the role of the practicing professional” has been criticized for not being “empirically based,” and in the 1980s, teacher preparation programs that taught such practices were considered “idiosyncratic and normative” by professional organizations such as the American

Association of Colleges of Teacher Education and the Association of Teacher Educators (Cochran-Smith & Lytle, 1999, p. 260). In response to this criticism, the practices to teach to novices came to be based on the findings of what we refer to as *process-product research*, which rigorously linked teacher behaviors with student outcomes. (See, for example, Rosenshine, 1983.)

Contemporary reformers of teacher education have sidestepped the question of whether practical wisdom or empirical research should determine which “best” practices should be the focus of teacher preparation. Instead, they speak of “core practices” (Grossman, & McDonald, 2008), “generative practices” (Franke & Chan, 2006; Franke & Kazemi, 2001), and “high-leverage practices” (Hatch & Grossman, 2009; Sleep, Boerst, & Ball, 2007). With these terms, researchers and reformers name the strategies, routines, or activities that novices need to learn to do and from which they will continue to learn teaching. Hatch and Grossman (2009) see such practices as the fundamental key to linking teacher education for novices with what practicing teachers do:

High-leverage practices are approaches to teaching that can be used to address common problems of practice that teachers face and that novices will almost certainly need to employ once they begin teaching. High-leverage practices also enable novices to continue to learn; for example, learning to elicit student thinking in discussions allows new teachers to learn about the different ways students may be thinking about a text or problem. (pp. 76-77)

Ball, Sleep, Boerst, and Bass (2009) defined high-leverage practices somewhat differently, focusing more on their centrality in advancing *student* learning. They are

teaching practices in which the proficient enactment by a teacher is likely to lead to comparatively large advances in student learning. High-leverage practices are those that, when done well, give teachers a lot of capacity in their work. They include activities of teaching that are essential to the work and that are used frequently, ones that have significant power for teachers’ effectiveness with pupils. (pp. 460-461)

The bases of the choices made by these reformer-scholars about what to include in their list of the teaching practices novices should learn are not simple to establish. The identification of high-leverage practices in the work of Hatch and Grossman (2009) and of Franke and Chan (2006), for example, is linked with work at the Carnegie Foundation for the Advancement of Teaching. The Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) provided fellowships to teachers in both K-12 and higher education who had been nominated for both their excellence

in teaching and their involvement in efforts to study and document their practice. These teachers created records of their practice that were made public for use by other teachers and teacher educators (Hatch et al., 2005). Then, in the Goldman–Carnegie Quest Program, a group of teacher educators who were using these records derived the concept of high-leverage practices from them and made both their deliberations and their use of the records to support the learning of teaching public on a Web site called Inside Teaching. The purpose of the CASTL and Quest projects was to represent the practices of highly regarded teachers so that teacher education could draw more coherently on “the wisdom of practice.”

Although Boerst was himself a Carnegie Teaching Fellow, the work he did to identify high-leverage practices with Ball, Sleep, and Bass follows a different path (see, for example, Sleep et al., 2007; Boerst & Sleep, 2007; and Ball et al., 2009). It is grounded in the development of the Math Methods Planning Group at the University of Michigan. This group has been refining a list of practices whose importance is sanctioned not by the wisdom of practitioners but by reference to professional standards as articulated in such documents as the Interstate New Teacher Assessment and Support Consortium Core Standards, National Board for Professional Teaching Standards Core Propositions, Professional Teaching Standards from the National Council of Teachers of Mathematics, University of Michigan Student Teaching Handbook, State of Michigan Standards for Ensuring Excellent Educators, and Mathematical Education of Teachers from the Conference Board of the Mathematics Sciences.²

Apart from the considerations of what counts as evidence for choosing practices that advance student learning, this perspective on teacher learning raises the question of size: How “big” is a practice? Hatch and Grossman (2009), for example, consider “orchestrating class discussions” as a practice: “We consider orchestrating group discussion to be a high leverage practice for English teachers because such discussions are ubiquitous in secondary classrooms, and orchestrating a good group discussion leads to opportunities for learning for both students and teachers” (p. 77). Within the practice of orchestrating a classroom discussion, which they parsed based on a study of the teaching of CASTL teacher Yvonne Hutchinson, they refer to the “techniques” of using stock responses and anticipation guides as “tools” that novices can learn as ways to engage students in discussions. They also identified these techniques as “teaching moves.” In contrast, Boerst and Sleep (2007) did not refer to the work of leading a discussion as a “practice” but rather as a “domain” of practice. The domain of leading a discussion is further decomposed into “practices” such as eliciting contributions and managing collective work. These practices are then further decomposed into “strategies for teaching” such as probing student ideas and tracking participation, and these

comprise even smaller “techniques for teaching” such as revoicing and using wait time.

Although teacher educators vary in how they do it, decomposing teaching into component practices at these varying levels is a way to identify and name what new teachers need to be able to do. This decomposition of the work leads to another use of the word *practice* because it gives credence to the idea that the components can be learned separately before the novice takes on the full-blown work of teaching. If one thinks of teaching as divisible into practices such as probing student ideas, for example, then teacher preparation can be organized to have novices “practice” that over and over again until they get good at it and only then integrate this component of the work with the others that are necessary to pull off a classroom discussion successfully. I now turn to the implications this usage has for learning the work of teaching.

Practice for Future Performance

The verb “to practice” is defined as “the doing of something repeatedly or continuously by way of study; exercise in any art, handicraft, and so forth, for the purpose, or with the result, of attaining proficiency.” Used in this way in relation to the work of teaching, the term requires us to specify what the “something” would be that could be learned by being practiced or repeated. The connection could be to the kind of discrete practices described above, or it could encompass the more comprehensive idea of learning teaching from experience. In the latter view, the more one teaches, the more proficient one becomes. There is evidence that teachers do become more effective with 2 years of experience, perhaps from practicing in the sense of repeated efforts to do the same thing (Kane, Rockoff, & Staiger, 2008).

A synonym for the verb form of practice is *rehearse*. Rehearsal is something that occurs in preparation for performance. Both practicing and rehearsing are often done in the context of getting feedback. In studies of professional learning among practicing teachers, groups of teachers seeking to improve are found to “replay and rehearse” as they talk together, telling one another about classroom incidents, giving one another feedback, and using those incidents as a basis to prepare for future teaching by repeating what they have learned from the particular in more general terms (Horn, 2005). Kazemi and Hubbard (2008) identified rehearsals for learning teaching as a “pedagogy of enactment,” pointing out that they “simulate the sorts of situations teachers confront in the midst of instructional practice and thus engage teachers in the ways of knowing involved in classroom teaching” (p. 438). Following on the work of Graziani (2005), Lampert (2005), and Leinhardt and Steele (2005), they argued for the rehearsal of “routine instructional activities” in teacher education, pointing out that a focus on rehearsing and becoming proficient at the routine aspects of teaching can provide a backdrop for learning how to make the

more complex interactive judgments that are required in the context of an activity. (For a further elaboration of this argument, see Lampert, Beasley, Ghouseini, Kazemi, & Franke, in press, and Lampert & Graziani, 2009).

Using rehearsal as a pedagogy in teacher education raises the questions of what kind of feedback is useful to the novice who is rehearsing, and who is best qualified to give it. If we are talking about learning mechanical skills that involve training one’s muscles to move easily in a certain way, then simply doing them over and over, even in private, would certainly suffice. Writing clearly on the whiteboard might be an aspect of teaching that could be learned in this manner. One could do the performance and then look at what one has produced to get feedback on whether the result approaches clarity. More complex performances, such as delivering a coherent lecture, might entail practicing with an instructor since it is much harder to hear one’s verbal performance and evaluate it in real time. A recording could substitute for an instructor, but one would have to have well-specified standards for judging one’s own performance. More typically, one would practice, or rehearse, something like lecturing with a knowledgeable other who could comment on aspects of the performance that would need to be improved. One would do the performance repeatedly, attempting improvement based on feedback, and have the instructor judge when one had achieved competency. (See, for example, the description of learning to preach in Grossman et al., 2009.)

Learning teaching by rehearsal raises the question of whether the more relational aspects of the work, in which successful interaction is fundamental, can be learned this way. Lecturing is interactive, to some degree, maybe more interactive than writing clearly on the board, but relationships play less of a role in a successful lecture than they would, say, in probing a student’s ideas to find out whether the student understands the relationship between multiplication and division. Knowing how to choose the next good question during such a probe would depend on what the student says, and a decision about when the probing has gone on long enough would depend on the quality of the relationship one has with the student in question. Can this aspect of teaching practice be rehearsed? What could be learned from repeated performances? Would one need to practice “on” real students? Would they need to be in classroom contexts? Would one do the performance over and over again with the same student?

If one thinks of a symphony orchestra rehearsing for a concert, one can see that the different sections learn to improve their ability to respond to one another by playing the piece over and over again under the direction of the conductor while the others wait and listen. But could we imagine a teacher and a student, in the midst of a class, being instructed on how to understand one another better, repeating their questions and responses until the instructor decides that their jointly constructed performance is acceptable? To practice, in the sense of repeating a performance over and

over again, could mean all of these things and more in the design of learning environments for novice teachers (Lampert, Scott, Murray, Ghouseini, & Lewis, 2008).

More than 20 years ago, David Berliner (1985) aggressively suggested practicing as appropriate for learning teaching. He was critical of having novices learn simply by reading about promising techniques. He suggested that they would be more successful in developing the “teaching behaviors” recommended by researchers if they had opportunities to rehearse those behaviors in laboratory settings before trying them in actual classrooms:

Reading Slavin’s book, or reading Aronson’s description of the jigsaw technique . . . or reading the Johnsons’ reports on cooperative learning outcomes and how they compare with competitive and laissez-faire classroom structures, without applying the concepts, is nonsense! If we want someone to have a repertoire of behaviors for running a small cooperative group, we must provide them with practice opportunities, perhaps on a small scale, perhaps through simulations. But somehow we need to provide practice opportunities in running the small group. (p. 5)

In an earlier effort to focus learning teaching on practicing based on similar assumptions, Nathaniel Gage (1968) led a lab in which teachers practiced, and were instructed in, the technical skills into which he believed the work of teaching could be analyzed.

These technical skills into which aspects of the teaching job have been analyzed are not merely the subjects of lectures and discussions in the teacher education program. Rather they form the basis for the intern’s practice teaching prior to his entrance into actual classrooms. . . . The sessions are recorded on video tape, and the trainee gets to see and hear himself immediately after the session. While he looks at and listens to himself, he receives criticisms and suggestions from supervisors trained to be both perceptive and tactful. Then he “re-teaches” the same lessons to a new small group of pupils in an attempt to improve on his first performance of the specific technical skill that is his concern. (p. 121)

Although the novice in Gage’s lab might start with refining a small “technical” piece of teaching, this method of learning was also varied so that “the nature of the teaching task can be made more complex so as to embrace a group of technical skills in their real life combinations” (Gage, 1968, p. 121). With the development toward complexity that he imagined, what Gage was recommending here could be considered to be a teacher preparation version of what Horn (2005) called “replays and rehearsals” in the talk of

classroom teachers, with the video providing a more accurate replay of the incident and the supervisor playing the role of a more knowledgeable teaching peer.

To consider the practicing of technical skills as a mode of learning the relational and contextually situated aspects of teaching, we must overcome the idea that creating teaching in response to observations of what particular students know and are able to do is entirely a matter of inventing action on the spot. Organizational learning researcher Dvora Yanow (2001) participated in a class on theatre improvisation and made the following assertion, based on that experience:

Possibly the most egregious misunderstanding about improvisation—whether in a theatre setting or in an organization—is the notion that improvised activities are invented on the spot, from scratch, as if in a void, without any preparation and without context. What became clear to me in both the improv and the scene classes is the extent to which improv teams practice together, and observe one another extensively, over time. Improvised activity, invented “in the moment” in response to some provocation . . . builds on extended, prior conjoint experience and mutual, collective, inter-knowing. . . . There is extended preparation (training or apprenticeship) in the rules of engagement, the rules of practice. (p. 59)

Building on Yanow’s observation, we could define the goal of teacher education to be preparing novice teachers in using the “rules of engagement.” Even though that work must be created by knowing how to make particular productive relationships, it is not necessarily inconsistent with practicing as a way of learning to do the work of teaching. In a classroom where a teacher is getting to know the students at the beginning of a school year, we could construe the repeated efforts at productive interaction that occur until everyone settles into a routine as a kind of repeated practice from which a teacher learns what Yanow called “the rules of engagement” for teaching a particular class. Both the teacher and the students learn, from their experiences with one another, what to expect and what the results of particular actions can be predicted to be. This perspective on learning from practice focuses attention on the personal uniqueness of expertise for teaching, because a particular teacher is getting better at teaching a particular group of students the longer the teacher works with them.

A more explicit view of what might be needed for practice in the form of experiences can be found in the work of Ericsson, Krampe, and Tesch-Romer (1993) on *deliberate practice*. They observe that learning from experience is not the most efficient way to become proficient:

Although work activities offer some opportunities for learning, they are far from optimal. In contrast,

deliberate [italics added] practice would allow for repeated experiences in which the individual can attend to the critical aspects of the situation and incrementally improve her or his performance in response to knowledge of results, feedback, or both from a teacher. (p. 368)

Preparation for teaching has not been organized to enable the kind of long-term deliberate practice with feedback from a teacher that Ericsson and his colleagues associate with learning. Although *coaching* has become a popular approach to teacher development, the culture of teaching makes many of the elements of coaching that exist in other fields difficult to achieve. Without common agreement about the forms that instructional activities should take, the activity of giving feedback often references only the idiosyncratic standards of the coach (Deussen, Coskie, Robinson, & Autio, 2007). This infuses the learning of teaching with a personal dynamic, resulting in a reluctance of the coach to be critical of the performance of the teacher being coached.

In an early study of coaching for learning teaching, Little (1990) observed that coaching was likely to be ineffective because teaching lacked a “technical culture”: Teaching, she argued, is characterized by a culture that values privacy and autonomy. She found that these characteristics diluted the effect that practicing with a coach could have on improving proficiency. To speak of teaching as work that has a culture brings us to the fourth—and perhaps the most complicated—use of the word *practice* in relation to learning teaching.

The Practice of Teaching

When we want to refer to what doctors and lawyers do, we talk in a global sense of *the practice* of medicine and *the practice* of law. The dictionary tells us that among all its other meanings, *practice* can mean “the carrying on or exercise of a profession or occupation, esp. of law, surgery, or medicine; the professional work or business of a lawyer or medical man.” Whether teaching is a profession, and how it might become one if it is not, is a topic often treated in educational writing. I will not attempt to address those questions here. I will stick with practice and ask, If teaching is a practice or occupation, in the sense that law and medicine are practices, what does that imply for learning teaching?

Learning the practice of teaching in this sense is learning “what teachers do” in common rather than learning what a particular teacher does by apprenticing with a more proficient individual. It is about more than acquiring skills or best practices. It involves adopting the identity of a teacher, being accepted as a teacher, and taking on the common values, language, and tools of teaching. Cook and Brown (1999) defined the term *practice* in this comprehensive, cultural way as “the coordinated activities of individuals and groups in doing their ‘real work’ as it is informed by a

particular organizational or group context” (p. 386). They use a medical analogy to clarify their use of the term *practice* as action with shared meaning:

If Vance’s knee jerks, that’s behavior. When Vance raps his knee with a physician’s hammer, that’s action. If his physician raps his knee as part of an exam, it is practice. This is because the meaning of her action comes from the organized contexts of her training and ongoing work in medicine (where it can draw on, contribute to, and be evaluated in the work of others in her field). (p. 387)

If teaching is a practice like medicine, it has a culture, meaning that, as a group, the people who do it are assumed to have shared practices. When doing those practices, one is drawing on, contributing to, and being evaluated by others in the field, and by doing so, one develops an occupational identity (Wenger, 2003).

Learning the practice of teaching is not only about learning to do what teachers do but learning to call oneself a teacher and to believe in what teachers believe in. When someone introduces himself or herself at a party as a teacher, the people he or she is meeting make certain assumptions about what he or she is like and cares about, to say nothing of what he or she should know how to do. These assumptions are based on people’s interactions with particular teachers, combined with the images of teachers they have seen and heard about in the media, in political rhetoric, and in conversations with friends and family. Joining the ranks of those who teach, one cannot escape being identified with the practice, writ large. When one joins teaching as a practice, the learning of the activity and the acquisition of identity go hand in hand: “Developing an identity as a member of a community and becoming knowledgeable skillful are part of the same process, with the former motivating, shaping, and giving meaning to the latter, which it subsumes” (Lave, 1993, p. 65). Taking this perspective on the meaning of practice raises questions about the role of a college or school of education in preparing novices. Myriad studies remind us of the limited impact that formal professional education has on what novices do, compared with the influence of the “real” teachers that novices work with in classrooms. (See, e.g., Clift & Brady, 2005.) It is those teachers that novices “identify with” and wish to become.

The culture of teaching is not homogeneous. One difficulty in sorting out what the cultural meaning of the word *practice* implies for learning teaching lies in the extent and locale of the group of practitioners to which the practice of teaching refers. Teaching in the United States is a more fragmented and disparate practice than is law or medicine and more varied in terms of what counts as competence. States and districts have considerable power to affect the way the job is defined, including who gets into the profession. And

one's teaching identity begins to develop before professional preparation begins. When a novice sets out to learn teaching, he or she has an image of what the work is that is drawn from at least 12 years of school experience: what Lortie (1975) called the "apprenticeship of observation." This image may or may not match the job the novice is preparing for, depending on whether he or she is staying close to home and whether "home" has stayed pretty much the same as it has been for years. If one moves from the suburbs to the city, or from one state to another, what one thinks is entailed in the work of teaching might not transfer to the new location, or may even be dysfunctional. Applied to professional education, this notion of local cultures of teaching practice raises another difficult question: Is it possible to prepare novices for practice in a way that will enable them to work in any school, anywhere?

At the school or department level, the nature of teaching practice is culturally defined when teachers work with colleagues with whom they share assumptions about the goals of their work and how to accomplish them (Lampert, Boerst, & Graziani, in press). The character of practice is formed as teachers interact face to face and use common tools—schedules, books, tests, software, play spaces, bulletin boards—in particular ways, to work on what they consider to be common problems (Grossman, Wineberg, & Woolworth, 2001; Horn, 2005). Teachers who work collaboratively across a school can be part of what has come to be called a *community of practice*. Such communities have been found to be a resource for teacher learning and innovations in teaching practice (Little, 1990, 2003; Wilson, & Berne, 1999).

Bryk (2009), who has long been involved in studies of the relationship between professional community and the quality of teaching in schools, recently warned against "wishful thinking" about what such communities could offer as a site for learning teaching practice. His recent argument about the power of instructional systems echoes Little's earlier attention to the importance of a "technical culture" in the process of learning teaching:

In operation, these efforts seem predicated on the idea that if we just gather teachers together to talk about practice, something good will happen. This too strikes us as a weak working assumption for change at scale. I propose a modest amendment. The social organization for improvement is a *professional learning community organized around a specific instructional system*. . . . [An instructional system] involves some very specific pedagogical practices and social routines and expects automaticity in their use. Educators have a shared language about goals for students and understand how these align over time around some larger conception of student learning. Teachers also share a common evidence base about what constitutes learning. This allows them to analyze and refine the cause-and-effect logic

that organizes their shared work. Finally, tying this all together is an explicit process for socializing new members into the community and for organizing ongoing social learning among all participants. (Bryk, 2009, pp. 599-600)

If we think of beginners learning teaching practice at the very local level of teacher learning communities, we would need to ask how socializing newcomers into such communities might be organized.

In the 1980s, there was a concerted effort among teacher educators to create institutions that were intended to mix the kind of teacher learning that has been documented among working teachers who interact in communities with the learning of novices, variously called *professional development schools* or *professional practice schools*. Levine (1992) defined professional practice schools as schools that are (a) models of good practice, (b) responsible for education and socialization of teachers for new roles, and (c) designed to support ongoing research directed at improving practice. In such schools, a collective of teachers at all levels of experience would work toward the solution of commonly recognized problems, sometimes joined by researchers from a nearby university. Recently, the National Association of Professional Development Schools (2007) set out several essential characteristics of such schools, including "a school-university culture committed to the preparation of future educators that embraces their active engagement in the school community" and "engagement in and public sharing of the results of deliberate investigations of practice by respective participants" (characteristics 2 and 5). An example of such work can be found in the Jacob Hiatt Center for Urban Education, where Clark University and the public schools of Worcester, Massachusetts, work as partners, both to improve teaching practice in urban schools and to introduce novices into teacher learning communities. In this kind of setting, teachers also serve as teacher educators. The common goal, on which all parties assess their success, is the improvement of the learning of children in poor schools, which is fundamentally linked by design to improved learning for both experienced teachers and preservice teachers (Teitel, 2001).

The efforts to establish professional development schools as collaborations between universities and K-12 systems in the 1980s could be seen as a return to a much earlier design for the organization of the learning of teaching practice. Revisiting that history provides some insights into how learning practice became a problem in learning teaching in the first place. The formalization of teacher education in the United States began with the establishment of *normal schools*. In 1898, there were 166 state and 165 private normal schools, where the learning of teaching was organized and "norms" for good teaching were established (Clifford & Guthrie, 1988). In these schools, K-12 teachers, their students, student teachers, and their teachers (the

normal school faculty) worked collaboratively, not only to enable novices to become competent but also to design and establish effective practice for common (public) schools in a setting where ideas about good practice were enacted and then revised based on direct observations of student learning. In Connecticut, for example, the state legislature funded a building in 1849 to house the Normal School and School of Practice, which would prepare teachers for the common schools of the state. As part of its plan of operation, the Normal School would be connected with a model school with more than 500 pupils from 4 to 20 years of age. Henry Barnard (1861), the superintendent of common schools in Connecticut, argued to the state's General Assembly in 1850 that the Normal School would

do for the future teacher what the direction of the master workman and the usual terms and duties of apprenticeship do for the future mechanic; what the law school, and clerkship in the office of an older practitioner at the bar, do for the young lawyer; what the medical school, the practice in the hospital, or dissecting room, or study in the office of the experienced physician do for the medical student. It is applying to the business of teaching the same preparatory study and practice which the common judgment of the world demands of every other profession and art. (p. 44)

Once the Normal School was established, a progress report by the new state superintendent, David Camp, documented that

the pupils of the Normal School visit the different rooms of the model school to observe and study the best methods of instruction and discipline . . . under the supervision of the presiding teacher of each room in the model school as well as by the direction of the teachers in the Normal School. (Barnard, 1861, p. 49)

Most normal schools disappeared in the 1920s, when they were folded into state colleges, which educated nurses, social workers, engineers, and other professionals, as well as teachers. At this point, teacher preparation became a 4-year baccalaureate course with some attention to practice rather than 1 to 2 years of regular work with teachers in classrooms, complemented by seminars in a school setting. In the past 50 years, many of these state colleges have become state universities, expanding even further their educational responsibilities and adding research to their expectations of what professors should produce. Clifford and Guthrie (1988) observed that the disappearance of normal schools "took with it two professional assets: first, the idea of the autonomous professional school devoted solely to the exalted preparation of teachers and second, a dominating concern with 'practical pedagogy'" (p. 61). But

there is a paradox in this development. Labaree (2004) has argued that providing students with practical knowledge about teaching means that schools of education would be likely to be marginalized in the academic hierarchy: "At the university, teacher education is seen as following the low road of practical instruction while the arts and sciences departments pursue the high road of more esoteric knowledge" (p. 33). In the 1960s, James Conant (1964) attempted to counter this marginalization at Harvard by introducing the idea of the "clinical professor," a role that would be designed to "bridge the gap" between theory and practice (Conant, 1964). Here we have come full circle, back to the common, but unhelpful, notion that theory and practice are different from each other and that in the organization of learning teaching, there is a "gap" to be "bridged."

Conclusion

Considering the multiple uses of the word *practice* in relation to learning teaching is a daunting exercise, both for what it reveals about what it might be necessary to do to solve the problems of learning teaching and for what we can learn about what others have imagined over time to solve these problems. If learning teaching is about preparing novices to do the work and preparing veterans to do the work better, then the first and most common way of using the word *practice* (as an opposite to "theory") in discussing problems of professional education seems to be the least helpful. Relational work requires both thought and action. Just teaching theory will not result in a capacity for thoughtful and productive interaction or adaptive expertise. The other meanings of *practice* point to some paradoxes. The idea that the work of teaching can be learned only in classrooms, where it is enacted, is challenged by the notion that pedagogies of enactment can make their way into preparatory courses through activities like rehearsal. The efficacy of such approaches to course instruction has yet to be explored. Similarly, we see pedagogies of investigation making their way from courses into schools as teachers reflect on their practice and bring novices into the discussion about how teaching can be improved. Although the practices of veterans need to be habitual and customary, it does seem possible for them to question their practices, and to change them when they are not working.

A strong congruence seems to exist between the notions that teaching is made of component *practices* and that teaching can be learned by *practicing*, though there are several aspects of this link that could be clarified. These would include defining the characteristics of the context in which practicing should occur, given the relational specificity of many aspects of teaching; choosing an appropriate grain size for what should be practiced; attending to the learning of the composition of separate practices in actually performing the work of teaching; and specifying what an instructor or coach

could add to what is casually referred to as learning from experience. All these considerations raise questions about the current composition of the teacher educator workforce and how it should be determined if, indeed, instructing novices while they are rehearsing for practice becomes common. They also suggest that leaving it to individual teacher educators to make these clarifications might not be the best way to move forward.

Perhaps the most important questions raised by different uses of the word *practice* in relation to learning teaching is whether practice is meant to be something that an individual does and learns from other individuals or something created and maintained by a collective and learned by participation in that collective. If it is the latter, we face several new questions: How can approaches to teaching that are not currently common practice be learned? What is the role of outsiders to practice in learning teaching, and how can that role be learned? How does what is learned about teaching vary from one local community of practice to another? How does one qualify for entry into a community of practice? If practice is passed from individual to individual, similarly difficult questions arise: How can the quality of teaching be uniformly maintained? What should be the entry requirements for an individual apprenticeship? Who is qualified to be a master? And who decides when an apprentice has learned enough to work independently?

It is encouraging that we have begun to focus on the problem of understanding what is entailed in learning the work of teaching. Looking across the use of the term *practice* in various approaches to this problem over time and across settings suggests that solving this problem will be challenging. If we work on the problem collectively, we are more likely to approach a solution. Collective work will require developing a common language. It is hoped that this exploration of the messy terrain in which “practice” resides can make a small contribution to that development.

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Notes

1. Whenever “the dictionary” is referred to, it is the *Oxford English Dictionary* found online at <https://quod.lib.umich.edu/o/oed/>

2. This list is taken from the syllabus for the course Teaching Children Mathematics, jointly constructed by the Math Methods Planning Group, available at http://www-personal.umich.edu/~dball/teaching/ed411_f2006_syllabus.pdf

References

- Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession* (pp. 3-32). San Francisco: Jossey-Bass.
- Ball, D. L., Sleep, L., Boerst, T., & Bass, H. (2009). Combining the development of practice and the practice of development in teacher education. *Elementary School Journal*, 109(5), 458-474.
- Barnard, H. (Ed.). (1861). State Normal School of Connecticut. *American Journal of Education*, 24, 15-58.
- Berliner D. C. (1985, Nov.-Dec.). Laboratory settings and the study of teacher education. *Journal of Teacher Education*, 36, 2-8.
- Boerst, T., & Sleep, L. (2007, April). *Uses and meanings of practice in learning to do the work of mathematics teaching*. Paper presented at the annual meeting of the American Educational Research Association, Chicago.
- Boyd, D., Grossman, P., Hammerness, K., Lankford, R. H., Loeb, S., McDonald, M., et al. (in press). Surveying the landscape of teacher education in New York City: Constrained variation and the challenge of innovation. *Educational Evaluation and Policy Analysis*.
- Bryk, A. (2009). Support a science of performance improvement. *Phi Delta Kappan*, 90(8), 507-600.
- Carr, D. (1992). Practical enquiry, values and the problem of educational theory. *Oxford Review of Education*, 18(3), 241-251.
- Clifford, G., & Guthrie, J. (1988). *Ed school: A brief for professional education*. Chicago: University of Chicago Press.
- Clift, R. T., & Brady, P. (2005). Research on methods courses and field experiences. In M. Cochran-Smith & K. Zeichner (Eds.), *Studying teacher education: The report of the AERA Panel on Research and Teacher Education* (pp. 309-424). Mahwah, NJ: Lawrence Erlbaum.
- Cochran-Smith, M., & Lytle, S. (1999). Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 24, 249-305.
- Conant, J. B. (1964). *The education of American teachers*. New York: McGraw-Hill.
- Cook, J., & Brown, J. S. (1999). Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organization Science*, 10(4), 381-400.
- Deussen, T., Coskie, T., Robinson, L., & Autio, E. (2007). “Coach” can mean many things: Five categories of literacy coaches in Reading First (Issues & Answers Report, REL 2007–No. 005). Retrieved July 19, 2008, from <http://ies.ed.gov/ncee/edlabs>
- Ericsson, K. A., Krampe, R. T., & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363-406.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013-1055.

- Franke, M. L., & Chan, A. (2006). High leverage practices. Retrieved April 16, 2009, from http://gallery.carnegiefoundation.org/insideteaching/quest/megan_loef_franke_and_angela_grace_chan_high.html
- Franke, M. L., & Kazemi, E. (2001). Teaching as learning within a community of practice: Characterizing generative growth. In T. Wood, B. Nelson, & J. Warfield (Eds.), *Beyond classical pedagogy in elementary mathematics: The nature of facilitative teaching* (pp. 47-74). Mahwah, NJ: Lawrence Erlbaum.
- Gage, N. L. (1968). An analytical approach to research on instructional methods. *Journal of Experimental Education*, 37(1), 119-125.
- Graziani, F. (2005, April). *The pedagogical practice of the authoritative professional in professional education*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E., & Williamson, P. (2009). Teaching practice: A cross-professional perspective. *Teachers College Record*, 111(9). Retrieved January 25, 2008, from <http://www.tcrecord.org/content.asp?contentid=15018>
- Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Teachers and Teaching, Theory and Practice*, 15(2), 273-289.
- Grossman, P., & McDonald, M. (2008). Back to the future: Directions for research in teaching and teacher education. *American Educational Research Journal*, 45(1), 184-205.
- Grossman, P. L., Wineburg, S. S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record*, 103(6), 942-1012.
- Hammerness, K., Darling-Hammond, L., Bransford, J., Berliner, D., Cochran-Smith, M., McDonald, M., et al. (2005). How teachers learn and develop. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358-389). San Francisco: John Wiley.
- Hatch, T., Ahmed, D., Lieberman, A., Faigenbaum, D., White, M. E., & Pointer Mace, D. H. (2005). *Going public with our teaching: An anthology of practice*. New York: Teachers College Press.
- Hatch, T., & Grossman, P. (2009). Learning to look beyond the boundaries of representation: Using technology to examine teaching (Overview for a digital exhibition: Learning from the practice of teaching). *Journal of Teacher Education*, 60(1), 70-85.
- Horn, I. S. (2005). Learning on the job: A situated account of teacher learning in high school mathematics departments. *Cognition and Instruction*, 23(5), 165-205.
- Houston, W. R., & Jones, H. L. (1974). *Three views of competency-based teacher education*. Bloomington, IN: Phi Delta Kappa.
- Huberman, M. (1993). The model of the independent artisan in teachers' professional relations. In J. W. Little & M. W. McLaughlin (Eds.), *Teachers work: Individuals, colleagues, and contexts* (pp. 11-50). New York: Teachers College Press.
- Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. *Economics of Education Review*, 27(6), 615-631.
- Kazemi, E., & Hubbard, A. (2008). New directions for the design and study of professional development: Attending to the coevolution of teachers' participation across contexts. *Journal of Teacher Education*, 59(5), 428-441.
- Kennedy, M. M. (1987). Inexact sciences: Professional education and the development of expertise. *Review of Research in Education*, 14, 133-167.
- Kennedy, M. M. (1999). The role of pre-service teacher education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession* (pp. 54-85). San Francisco: Jossey-Bass.
- Labaree, D. (2004). *The trouble with ed schools*. New Haven, CT: Yale University Press.
- Lampert, M. (2001). *Teaching problems and the problems of teaching*. New Haven, CT: Yale University Press.
- Lampert, M. (2005, April). *Preparing teachers for ambitious instructional practice: Learning to listen and to construct an appropriate response*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Lampert, M., Beasley, H., Ghouseini, H., Kazemi, E., & Franke, M. (in press). Using designed instructional activities to enable novices to manage ambitious mathematics teaching. In M. K. Stein & L. Kucan (Eds.), *Instructional explanations in the disciplines*. New York: Springer.
- Lampert, M., Boerst, T., & Graziani, F. (in press). Organizational assets in the service of school-wide ambitious teaching practice. *Teachers College Record*.
- Lampert, M., & Graziani, F. (2009). Instructional activities as a tool for teachers' and teacher educators' learning in and for practice. *Elementary School Journal* 109(5), 491-509.
- Lampert, M., Scott, S. Murray, O. Ghouseini, H., & Lewis, J. (2008, April). *The role of rehearsal in learning to do ambitious practice*. Symposium presented at the annual meeting of the American Educational Research Association, New York.
- Lave, J. (1993). Situating learning in communities of practice. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 63-84). Washington, DC: American Psychological Association.
- Leinhardt, G., & Steele, M. (2005). Seeing the complexity of standing to the side: Instructional dialogues. *Cognition and Instruction*, 23(1), 87-163.
- Levine, A. (2006). *Educating school teachers*. Washington, DC: Education Schools Project.
- Levine, M. (1992). *Professional practice schools: Linking teacher education and school reform*. New York: Teachers College Press.
- Little, J. W. (1990). The persistence of privacy: Autonomy and initiative in teachers' professional relations. *Teachers College Record*, 91(4), 509-536.
- Little, J. W. (2003). Inside teacher community: Representations of classroom practice. *Teachers College Record*, 105(6), 913-945.
- Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.
- National Association of Professional Development Schools. (August 2007). What it means to be a professional development school: Nine essentials. Retrieved April 25, 2009, from http://www.napds.org/nine_essen.html

- Norris, S. P. (2000). The pale of consideration when seeking sources of teaching expertise. *American Journal of Education, 108*(3), 167-195.
- Rosenshine, B. (1983). Teaching functions in instructional programs. *Elementary School Journal, 83*(1), 335-351.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.
- Sleep, L., Boerst, T., & Ball, D. L. (2007, March). *Learning to do the work of teaching in a practice-based methods course*. Presentation made at the research pre-session of the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA.
- Teitel, L. (2001). An assessment framework for Professional Development Schools: Going beyond the leap of faith. *Journal of Teacher Education, 52*(1), 57-69.
- Wenger, E. (2003). Communities of practice and social learning systems. In D. Nicolini, S. Gherardi, & D. Yanow (Eds.), *Learning in organizations* (pp. 76-99). Armonk, NY: M. E. Sharpe.
- Wideen M., Mayer-Smith, J., & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of Educational Research, 68*(2) 130-178.
- Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education, 24*, 173-209.
- Wisniewski, R. (1982). Three scenarios for Teacher Education. *Journal of Teacher Education, 33*(2), 2-6.
- Yanow, D. (2001). Learning in and from improvising: Lessons from theater for organizational learning. *Reflections, 2*(4), 58-62.

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