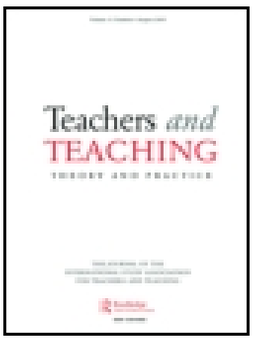

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Redefining teaching, re-imagining teacher education

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In this article, the authors provide an argument for future directions for teacher education, based on a re-conceptualization of teaching. The authors argue that teacher educators need to attend to the clinical aspects of practice and experiment with how best to help novices develop skilled practice. Taking clinical practice seriously will require teacher educators to add pedagogies of enactment to an existing repertoire of pedagogies of reflection and investigation. In order to make this shift, the authors contend that teacher educators will need to undo a number of historical divisions that underlie the education of teachers. These include the curricular divide between foundations and methods courses, as well as the separation between the university and schools. Finally, the authors propose that teacher education be organized around a core set of practices in which knowledge, skill, and professional identity are developed in the process of learning to practice during professional education.

Keywords: teaching; teacher education; researching practice; learning about teaching

Teaching as a complex practice

One of the challenges faced by efforts to gain professional status for teachers is that teaching is complex work that looks deceptively simple. Having spent considerable time in classrooms, parents and policymakers have had ample opportunities to observe classroom teaching. And in their roles as parents, lay teachers in religious schools, leaders of Boy or Girl Scouts troops, employers, etc. most of them have taught others. An argument for the complexity of classroom teaching thus requires an analysis of what differentiates the kind of informal teaching human beings engage in all the time from the instructional activity that occurs primarily in classrooms.

In an effort to highlight teaching as professional work, researchers in the 1980s focused on the knowledge demands of teaching, arguing that teaching requires a great deal of knowledge that is specific to the work of teaching. Similarly, the work on teachers' subject matter knowledge has tried to differentiate the kind of knowledge a well-educated person might have about a subject from the specialized knowledge of a subject required for teaching (Ball & Bass, 1999; Shulman, 1986). This emphasis on knowledge has obscured the importance of other aspects of teaching, including the need for skill in orchestrating instructional activities, and the relational work involved in creating classroom communities. Our views of teaching over the past several decades have evolved from an emphasis on teacher characteristics to a focus on

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teachers' behavior to more recent cognitive views of teachers as decision-makers and reflective practitioners. Teacher education has responded to this final turn toward the cognitive by shifting its focus from skills to knowledge and reflection. While clearly both of these are essential to the work of teaching, we want to argue that teacher education should move away from a curriculum focused on what teachers need to know to a curriculum organized around core practices, in which knowledge, skill, and professional identity are developed in the process of learning to practice (Grossman & McDonald, 2008).

In this article, we argue that teacher educators need to attend to the clinical aspects of practice and experiment with how best to help novices develop skilled practice. Taking clinical practice seriously will require us to add pedagogies of enactment to our existing repertoire of pedagogies of reflection and investigation. In order to make this shift, we also argue that teacher educators will need to undo a number of historical divisions that underlie the education of teachers. These include the curricular divide between foundations and methods courses, as well as the separation between the university and schools. Finally, we propose that teacher education be organized around a core set of practices for teaching that novices are helped to develop during professional education. We propose this not as a fully developed model for teacher education programs, but rather as a set of emerging and provocative ideas for rethinking how we prepare novice teachers.

Dismantling the curricular divide between foundations and methods

The teacher education curriculum historically has been divided between foundations courses, on the one hand, and methods courses, on the other. Foundations courses are meant to provide the 'foundational,' which often meant disciplinary knowledge for teaching. Such knowledge would include knowledge of learners and learning, from educational psychology; knowledge of the purposes of school, taken from history and philosophy of education; and knowledge of school and classroom structures. Methods courses have generally included the courses most focused on practice, including courses related to the teaching of particular subject matter, classroom management, and assessment.

Embedded within this curricular division is the distinction between the goals of these courses. Foundational courses are meant to impart 'conceptual tools' – the principles, frameworks, or guidelines that teachers use to guide their decisions about teaching and learning (Grossman, Smagorinsky, & Valencia, 1999). These tools may include general, applicable theories such as constructivist theories of learning, motivation, and instructional scaffolding or more philosophical views related to the purposes of schooling such as social justice and the goal of improving educational opportunities for historically under-served students. Conceptual tools facilitate teachers' framing and interpretations of practice, but they do not offer specific solutions for negotiating the dilemmas that arise in interactions with students.

Methods courses, in contrast, historically have been designed to help students develop strategies and tools for teaching. These courses are more likely to be seen as providing teachers with 'practical tools' – the kinds of practices, strategies, and relationships that teachers can enact in classrooms as they strive to accommodate the needs of students and challenge them with intellectually rigorous content (Grossman et al., 1999). While conceptual tools are general in nature, practical tools are specific,

concrete, and meant to be enacted in classrooms. On the other hand, we see practical tools as not purely technical strategies divorced from the intellectual, but rather as defined through a socio-cultural perspective (Chaiklin & Lave, 1996). In this view, practice incorporates both the technical and the intellectual, and is enacted not by single individuals but as members of a broader community of practice (Chaiklin & Lave, 1996; Grossman et al., 2009; Miller & Goodnow, 1995).

Even in methods courses, the emphasis may be more on learning *about* instructional methods and less about learning to enact such practices fluidly. As Lampert comments:

> Currently, teacher education in the US is built around a collection of 'methods' courses in which prospective teachers learn about what methods exist for teaching particular subjects and how they are grounded in educational theory and research. For teachers already out in schools, new methods are taught in courses or in workshops offered at the school site. But learning about a method or learning to justify a method is not the same thing as learning to do the method with a class of students, just as learning about piano playing and musical theory is not learning to play the piano. The later requires getting one's hands on the instrument and feeling it 'act back' on one's performance. Because teaching is situated in instructional interaction, learning how to teach requires getting into relationships with learners to enable their study of content. It is here that one learns how to teach as students 'act back' and responses must be tailored to their actions. (Lampert, 2005, p. 36)

This separation between methods courses and foundations courses, and their respective aims, is problematic for a variety of reasons. First and foremost, it contributes to the fragmentation that so many teacher educators have identified as problematic in teacher preparation, in particular, the disconnection between theoretical knowledge and teachers' practical work in classrooms. Second, it relegates issues regarding the practices of teaching to particular courses rather than integrating them throughout teachers' professional preparation. Finally, in some ways it places the focus of learning to teach upon the conceptual underpinnings of teaching as opposed to the concrete practices new teachers may need to enact when they begin teaching – practice is not at the core of the curriculum.

Separation of coursework and clinical experience

The divide between theory and practice in teacher education is best exemplified by the historical separation between university-based course work and fieldwork in local K-12 schools. An underlying assumption of this separation is that the theoretical resides in university course work and the practical resides in school-based placements. Often, teacher educators emphasize the conceptual tools for teaching within coursework and consider school placements as the sites where preservice teachers can enact these concepts through their engagement with specific strategies (Rosaen & Florio-Ruane, 2008).

Numerous scholars have challenged this assumption. In 1904, John Dewey argued that professional instruction of teachers necessarily must include both theoretical and practical work, raising the question of how theory and practice relate in the context of professional education. Since then and particularly once teacher education became part of the university, teacher educators have been challenged to conceptualize the relationship between theory and practice and to develop structures and practices within professional preparation that support prospective teachers to develop theories and practical strategies for teaching. Korthagen and Wubbels (2001) argue:

> … many studies in teacher education show that student teachers do not use much of the theory taught in teacher education. Moreover, beginning teachers often complain about the fact that, once in school, they meet many problematic situations for which they were not sufficiently prepared. (p. 32)

Smagorinsky and colleagues argue that the perception of theory and practice as distinct from one another continues to sap the richness of the ways in which 'abstract principles are interwoven in worldly experience' (Smagorinsky, Cook, & Johnson, 2003, p. 1399). Others argue for an ecological perspective in which the interdependence and interaction between theory and practice and courses and placements would be highlighted (Rosaen & Florio-Ruane, 2008). Though scholars of teacher education periodically revise the relationship between theory and practice, teacher education programs struggle to redesign programmatic structures and pedagogy to acknowledge and build on the integrated nature of theory and practice as well as the potentially deep interplay between coursework and field placements.

Over time, teacher education programs have implemented structural and pedagogical responses to lessen the separation between university courses and school field placements. For example, in the 1980s and 1990s, a wide range of teacher education programs aimed to build professional development schools – one aim of which was to provide greater opportunities for interaction between courses and field placements (Darling-Hammond, 1994). As part of this effort, some teacher educators located methods courses in K-12 schools with the assumption that changing the location of the course would increase the likelihood that preservice teachers would see and forge connections between theory and practice.

Teacher educators have also employed pedagogical innovations to address this separation such as requiring preservice teachers to complete an array of assignments that draw on their field experiences, and the use of case methods (e.g., Sykes & Bird, 1992). Despite these responses, teacher educators and teacher education programs continue to falter along this divide.

Directions for teacher education

Organizing around core practices

Shifting teacher education from a curriculum organized by knowledge domains to a curriculum organized around practices of the profession will require at least two fundamental shifts on the part of teacher educators: first, teacher educators must work to develop programs that undo the historical separation between foundation and methods courses; second, teacher educators must focus upon helping novices develop and refine a set of core practices for teaching. Such shifts will require changes in focus both at the pedagogical and organizational level of teacher education.

Similar arguments to shift to a more practice-centered curriculum have been made in the past, but the responses have been more structural than substantive. Efforts to bridge the field and the university have led to a variety of solutions, many of them mentioned above, including teaching methods courses in schools, having K-12 educators teach methods classes, and creating assignments that bridge between K-12 classrooms and the universities and other structural responses. Programs in 'realistic teacher education' have reorganized the curriculum in key ways in order to create a more equal balance between theory and practice (Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001). Programs that take a

realistic approach are organized around new teachers' concerns – such as managing the classroom and dealing with the 'reality shock' of being a new teacher – and are intended to introduce theory at the appropriate moment that best responds to particular issues or concerns raised for teachers by the student teaching experience (Van Tartwijk, Veldman, & Verloop, 2008). Practical concerns of teachers provide the foundation for the curriculum.

We propose a different solution – to reorganize the curriculum around a set of core practices and then help novices develop professional knowledge, and skill, as well as an emerging professional identity around these practices. The practices of teaching would provide the warp threads of the professional curriculum, while the knowledge and skill required to enact these practices constitute the weft. This vision has a different emphasis from programs such as a realistic approach, in which teachers' concerns and needs are at the center. In the remainder of this article, we try to re-imagine a teacher education program developed in accordance with these ideas.

Defining core practices

A number of researchers are currently trying to identify a set of high-leverage practices that might be targeted in teacher education (e.g., Franke, Grossman, Hatch, Richert, & Schultz, 2006; Kazemi & Hintz, 2008; Kazemi, Lampert, & Ghousseini, 2007; Sleep, Boerst, & Ball, 2007). While the definitions of what constitutes a high-leverage practice vary a bit to bit across researchers, all definitions share the following characteristics:

- Practices that occur with high frequency in teaching;
- Practices that novices can enact in classrooms across different curricula or instructional approaches;
- Practices that novices can actually begin to master;
- Practices that allow novices to learn more about students and about teaching;
- Practices that preserve the integrity and complexity of teaching; and
- Practices that are research-based and have the potential to improve student achievement.

High-leverage practices for novice teachers might include leading a guided-reading lesson in elementary reading, for example, or engaging students in choral counting in mathematics. Some pilot work at the University of Michigan (Scott, 2008) identifies reading aloud to children as a surprisingly complex practice that meets our definition. In secondary English, learning to lead a classroom discussion of literature meets our definition of a core practice, while providing clear instructional explanations (e.g., Leinhardt, 2004) is a high-leverage practice that cuts across grade levels and subject areas.

Focusing on core practices within teacher education provides teacher educators with the opportunity to address teaching as a complex task, while also enabling them to focus on key components with novice teachers. For example, leading classroom discussions is a complex practice which may take teachers years to master; however, within teacher education, novices might focus on developing on some of the instructional routines that constitute the practice of leading discussions, including identifying generative questions or choosing rich problems to discuss, as well as learning to take

up, or revoice, student ideas in the midst of a discussion. While novices might start by focusing upon each of these instructional routines separately, over time, as they gain a bit more experience, they might have opportunities to integrate some of these practices – just as they would naturally be integrated in the classroom in their future teaching work.

In focusing on core practices, we argue that teacher educators must attend to both the conceptual and practical aspects associated with any given practice. Consider the practice of instructional scaffolding. When teaching practices related to instructional scaffolding to preservice teachers, teacher educators can focus on the underlying theoretical principles of why to scaffold instruction so that teachers learn when and under what conditions to provide instructional scaffolding. In addition, teacher educators should provide preservice teachers with opportunities to learn and enact the instructional routines involved in scaffolding instruction. While novices experiment with enacting such practices, they also are developing a professional identity built around their role as a teacher – the practices help elaborate their understanding of what it means to act as a teacher (cf. Ronfeldt, 2008). Professional knowledge and identity are thus woven around the practices of teaching.

From our perspective, teacher educators will need to provide greater assistance to preservice teachers as they begin to learn the conceptual and practical tools of any specific practice. This will require moving away from the more common method in teacher education of presenting principles for teaching or academic knowledge in university courses, asking preservice teachers to observe a related strategy in their field placements, and then requiring them to enact that strategy on their own. This method of providing teachers with academic knowledge that they then take out to apply in practice continues to reinforce a dichotomous view of theory and practice. Principles developed in the absence of assisted practice lack the depth required for novice teachers to enact such principles in practice. At the same time, learning to enact instructional routines in the absence of a developing sense of the principles underlying such routines reinforces a view of teaching as a set of techniques. Rather we suggest a more iterative and interactive relationship between teachers' development of principles for teaching and practical tools. This conception places significant demands on teacher educators and teacher education. We address some of these demands in the section on pedagogical implications ahead.

Re-imagining the curriculum

In order to follow our own advice, we would first need to decompose the practice of teaching into its constituent parts in order to identify the core practices that could then provide the basis for such a curriculum. At this point, we do not yet have a well-developed framework for parsing teaching (c.f. Grossman & McDonald, 2008). For the purposes of this article, we propose to use several of the core practices defined by Magdalene Lampert (2001) in her book *Teaching problems and the problem of teaching* as a starting point for this work. In our development of these examples, we hope to demonstrate how putting practice at the center of the curriculum might change how we organize professional education.

In our first example, we take the example of developing a classroom culture as our starting point. This is the first example in Lampert's book and certainly represents the kind of core practice we have in mind. As many have argued, the nature of the classroom culture that is established early in the year lays the foundation for all

subsequent teaching and learning activity and certainly has high face validity with classroom teachers.

But developing a classroom culture is itself composed of a number of more discrete practices and instructional routines that novice teachers must learn, including: developing productive and professional relationships with students; helping students develop positive relationships with each other; managing transitions between activity structures; and creating classroom routines. As Lampert suggests in her book, developing a productive relationship with students necessarily involves developing this relationship around subject matter, including routines for working on mathematics or science.

One core practice for creating a productive classroom environment involves teaching students routines for working together, which Lampert terms 'establishing structures for students' independent and collaborative activities' (2001, p. 79). We regard this as a high-leverage practice as it is something novice teachers need to know how to do almost immediately once they begin teaching, and doing this successfully sets the stage for a variety of other classroom practices related to teaching and learning.

This practice also cuts across the various curricular divisions of traditional teacher education, bringing together content that might currently be taught in different segments of the teacher education curriculum – in classroom management classes, in methods courses, and in foundations classes in learning and in multicultural education. Teaching students routines for working together requires that novice teachers learn to be sensitive to issues of status and equity within the classroom, to negotiate patterns of inclusion and exclusion, and to be sensitive and knowledgeable about group dynamics. For example, to build a classroom environment that provides high-quality opportunities to learn requires teachers to understand differences among students along a variety of dimensions including race, ethnicity, and language. It also requires teachers to have the skill to use their understanding of students' differences when making pedagogical decisions about building the classroom community. This practice also necessarily involves subject matter, as students must learn how to support each other in subject-specific tasks, such as responding to peer writing, working together on lab experiments or other scientific inquiries, participating in mathematical conversations, and the like.

Within this core practice, then, teacher education might help novices learn strategies for teaching norms for student interaction, drawing on the work of social psychologists and sociologists. Elizabeth Cohen, in her book *Designing groupwork* (1994), suggests a number of activities to prepare students to work together, including teaching norms for working together and engaging students in training activities such as 'broken circles' and the like. While such activities might currently be modeled in current teacher education classes, we suspect that students have relatively few opportunities to actually try out these activities in their role as teachers, with careful coaching around the challenges of engaging students in such activities. Similarly, novices could try out ways of responding to students who refuse to work together, a predictable occurrence in classrooms and yet one that novices may be relatively unprepared to address. Having opportunities to rehearse such responses ahead of time, in environments that are less complex than classrooms, can help novices hone their practice and prepare them for when they will need to respond in the moment.

Another component of this practice would also involve helping students develop more subject-specific ways on working together. For example, teaching students to

respond to their peers' writing weaves together the more general understanding of establishing norms for peer interaction with an understanding of the role of response in the teaching of writing. Novice teachers need practice in helping students learn to give constructive, substantive feedback to their peers from a reader's perspective. Again, in many teacher education programs, novice teachers have opportunities to practice giving responses to peers, as instructors model the writing process. But they may have fewer opportunities to practice how to respond to students who give cursory or unproductive feedback, or to teach norms for response in settings that more closely approximate the classroom. In her work, Leslie Herrenkohl and her colleagues demonstrate the power of developing routines for asking questions of peers during science lessons and Ball and Lampert's work illustrates routines for questioning mathematical conjectures. As part of learning to teach students routines for working together, novice teachers need opportunities to see what such routines look like within specific subject areas and to try them out with assistance in a variety of settings.

Of course many of these practices naturally overlap in everyday classroom teaching; novices will ultimately need to be able to integrate these in their own teaching. But at the same time it is important to recognize that pulling out a particular practice – such as teaching students norms for interacting in groups, or helping students learn to give one another feedback – can help provide targeted, specific work that can better prepare them to ultimately bring these kinds of practices together in their own classrooms.

Learning about student understanding

We contend that another core practice of teaching involves learning about students across the year and using that learning in planning for instruction. Thus, we take as our second example, the practice of learning about student understanding. This practice draws upon a variety of key ideas taught in traditional teacher preparation as it requires learning about how students learn and how one assesses learning; understanding cultural differences among students; and also developing a sense of how students typically come to understand (and misunderstand) key topics in particular subject areas – being sensitive to common errors, trouble spots, and typical roadblocks to deepening understanding. Just as developing a classroom culture is composed of more fine-grained practices and instructional routines and strategies, so too is learning about students and their understanding, which might include strategies like eliciting student thinking during interactive teaching, anticipating student responses, and eliciting further thinking.

One core practice for learning about student understanding involves *eliciting student thinking during interactive teaching*. Using an example from Ball (1993), when math teachers are discussing the concepts of positive and negative numbers with their students, for instance, they need to know how to find out what a student might mean when he or she says that a whole number can be '*both* positive and negative.' A teacher needs to know what questions to ask the student, and how to phrase them, in that moment – which may be in the middle of a larger class discussion or in a small group – in order to find out what the student is thinking when he or she makes such an observation. A teacher needs to also be able to determine which student ideas are worth questioning or pursuing, as well as how to help students articulate their ideas so that a teacher can understand the underlying logic behind their ideas (Kazemi & Hintz, 2008).

A second practice might involve *anticipating student responses*. This involves having a sense for the kind or range of possible answers or ideas students might consider, and being able to evaluate student discussions for evidence of those ideas. This also involves having an understanding of the possible trouble spots, common errors, or misconceptions children might have in this area – and being able to identify them in student talk or representations. Indeed, in some ways this practice has many similarities to the work teachers do in Japanese lesson study (Lewis, 2008; see also Stigler & Hiebert, 1999). As Lewis notes:

> … the extensive planning anticipates much of what children will offer during the lesson. … Teachers generate every possible student response they can imagine for the … lesson, using past experience, research, expert consultation, and informal queries with children before the lesson. These possible responses from children are written out, with the teacher's next move written out for each. (2008, p. 6)

In fact, after the planning phase, the lesson is practiced with a group of students – but also in front of a number of adults. Following the lesson there is a 'post-lesson critique' in which the observers and teachers consider how much children seemed to learn and how to alter the lesson in response. The amount of time spent on this particular aspect of teaching during lesson study demonstrates its centrality for both teaching and teacher learning.

Another core practice in this area might involve *eliciting further thinking*. For instance, a teacher also needs to know how to push students for further explanation, for instance, being able to ask 'Why does this work?' or 'Can you explain what you mean?;' and it may also mean asking other students to rephrase the idea in their own words, comment upon the idea, or suggest a different method (Ghousseini, 2008). This practice also involves understanding how to create an environment in which students feel comfortable sharing ideas in a group and trying to discuss ideas that may not be entirely clear (or correct, in their minds).

Orchestrating classroom discussions

A third core practice involves leading classroom discussion, a practice that cuts across grade levels and subject areas. As was true of the other practices we've detailed, leading a classroom discussion necessarily draws on a range of more discrete practices, strategies, and instructional routines, while also drawing on knowledge of content, of group dynamics, status and equity, and of students' development. Three component practices related to orchestrating classroom discourse include asking questions or posing problems to begin a discussion, monitoring student participation during discussion, and responding to student ideas. Each of these is critical to the practice as a whole and represents practices that novice teachers can begin to develop in teacher education and the early years of teaching.

Learning to generate questions that stimulate good discussions is one important component of leading discussions, and something that novice teachers can again practice during preservice teacher education. This is generally the component of classroom practice that already receives the most attention in methods classes, and a number of different instructional classifications exist for question-posing. In mathematics discussion, posing a problem for discussion is also a critical component of classroom practice that requires skill and an understanding of the mathematics to be covered. Novice teachers need multiple opportunities to generate questions or pose

problems, test them out in settings that provide them with genuine feedback, and then use what they've learned to refine their practice. Such cycles of experimentation in settings that move closer and closer to actual classrooms provide the foundation for more mature forms of practice.

Responding to student ideas is another key component of leading classroom discussions. Research on classroom discourse, including instructional conversation (Leinhardt & Steele, 2005; Tharp & Gallimore, 1991), uptake (Nystrand, Gamoran, Kachur, & Prendergast, 1996), and revoicing (O'Connor & Michaels, 1993) all suggest ways of thinking about instructional routines for how teachers take up, elaborate, and extend students' thinking during instruction. Teacher education could provide regular and sustained opportunities to learn to do this kind of follow-up on student thinking so that students as a group begin to understand a key idea. Teachers can learn to take up a particular students' idea or representation, in order to help focus the group toward a key principle or concept that the teacher knows will assist the class in further understanding. As teachers get better at this skill, they will learn more about students' understanding, as well as about how to lead classroom discussions. Such forms of intentional rehearsal and 'deliberate practice' allow instructional routines, such as posing questions, or instructional moves, such as revoicing, to become more automatic (c.f. Ericsson, 2002).

Pulling these strategies apart enables a direct focus upon distinct strategies and moves that can take place in an environment of purposeful, guided support. Of course, these core practices do not get treated distinctly in the classroom – rather, they are integrated in multiple ways. Thus, over time, one might also imagine that while novices might begin attending to one core practice, eventually novices could also practice their integration – just as in the classroom one might naturally use a number of these core practices for eliciting student thinking. Indeed, orchestrating a group discussion in a real classroom would likely draw upon core practices from all three of the areas we've proposed, as it would require norms and routines for working together as well as eliciting student thinking and monitoring student participation. Perhaps in orchestrating a group discussion in a teacher education setting, novices could practice – under the supervision of a teacher educator, their peers, or a master teacher – a small number of these strategies. Teacher educators could engage novices, for instance, in setting up norms for discussion, eliciting student thinking, uptake and revoicing, and monitoring student participation, so that they would have an opportunity to bring several core practices together in a meaningful way.

This kind of integration has implications for feedback and assessment – one might imagine that in the integration, some novices might be more successful with some core practices but not with others. Teacher educators might need to be cautious about continuing to provide feedback that continues to distinguish core practices from one another when assessing novices' attempts – for instance, helping a novice understand that while she was particularly successful in setting norms for group discussion, she appeared to have had more trouble monitoring some specific students' participation.

Pedagogical implications for teacher education programs

What would it mean to target these kinds of core practices during teacher education? How would teacher education look different if we organized the enterprise around such practices? In the following section, we explore the pedagogical implications of such a shift in emphasis.

One of the pedagogical implications of the shift toward a practice-based curriculum would be the need to incorporate what we have termed 'pedagogies of enactment,' including the use of approximations of practice in teacher education.

Approximations of practice include opportunities to rehearse and enact discrete components of complex practice in settings of reduced complexity (see Grossman et al., 2009, for a more extended discussion of approximations of practice). As suggested above, approximations of practice in teacher education might focus on instructional routines such as guided reading or probing students' thinking in mathematics that are both integral to the work of beginning teachers and have integrity as core components of instruction.

Building on the idea of approximations of practice, a group of mathematics educators are beginning to develop a framework of instructional routines for teaching elementary school mathematics that will become the basis of mathematics methods courses at several universities (Kazemi, Lampert, & Ghousseini, 2007). In this work, the teacher educators have developed a set of instructional routines that novices will have multiple opportunities to enact both in coursework and field experiences.

In the remainder of this section we explore a variety of approximations of the practices we identified above. At the core of our argument is the need to incorporate more opportunities for novice teachers to 'practice' the various instructional routines that are central to core practices of teaching. While teacher education is replete with examples of modeling, in which the teacher educator models classroom routines or activities for student teachers, such approaches generally keep student teachers in the role of students. The move from discussing what one might do as a teacher to actually taking on the role of the teacher is a critical one, allowing novices to assume the role and persona of the teacher while receiving feedback on their early efforts to enact a practice.

For example, in helping novices develop routines to help students work together, teacher educators might have student teachers assign and explain differentiated roles for participating in a scientific presentation and then practice how to intervene to support students in enacting these roles. Other approximations of practice could include activities related to anticipating student understanding. For example, one could imagine new teachers transcribing a classroom discussion and annotating the text with their interpretations of student comments, questions they as teachers might ask the students in order to help them articulate ideas more fully in order to confirm or disconfirm these interpretations.

To support the ability to anticipate student responses, teacher educators might also borrow from the activities of lesson study described above. In teacher preparation, one could imagine new teachers taking a possible topic or lesson and generating all the possible student responses (producing a kind of 'annotated' lesson); practicing the lesson with one another and generating additional trouble spots; then practicing the lesson in their own classrooms with their students and an audience of peers and teacher educators; and engaging in a post-lesson discussion about how to alter it.

To help novice teachers learn to teach using classroom discussion, teacher educators could create opportunities for novices to lead a 'practice discussion' with groups of student teachers, using a topic or text or problem they plan to teach, role playing 'students' with frequent breaks in the discussion for evaluation, critique, and questioning about the comments 'students' made, and suggestions for further eliciting student thinking and comments. Teacher educators could then provide coaching around more specific strategies, such as teacher uptake or revoicing. While many

teacher education programs might include such 'model discussions,' the emphasis here is on the development of specific instructional routines or practices, with novices enacting the teacher role.

In many cases, such approximations of practice can supplement existing pedagogical approaches in teacher education. For example, many child and adolescent development courses taught in teacher preparation programs are designed to help new teachers understand the ways in which children develop in different arenas – cognitively, socially, linguistically, physically, and so forth. In some programs, teacher educators have found that asking prospective teachers to develop 'cases of children' can be particularly powerful in helping them understand the complexities of children's development along these different pathways (Darling-Hammond et al., 2005; Goodwin, 2002; Hammerness, Darling-Hammond, & Shulman, 2002; Roeser, 2002). However, a focus upon practices might require a reframing or broadening of the 'child study' case in order that new teachers could develop a means of acquiring information on *all* their students that would more accurately represent the kind of observational work they might do as a full-time classroom teacher, without the opportunity to conduct a semester long inquiry into one child. This might mean that new teachers would learn about strategies to assess the development of multiple children in their classrooms, to conduct surveys of children's learning strengths and weaknesses, and to assess and collect information on the developmental range of children in their classroom.

Similarly, in English or English Language Arts methods courses, many teacher educators already teach about the use of individual reading assessments (IRAs) in their courses. In these courses, teacher educators typically introduce a variety of these assessments to their students. However, in a vision of teacher education focused upon core practices, teacher educators would ask student teachers to conduct a series of these reading interview or administer an assessment like the QRI-3 (Lauren & Caldwell, 2001) with their peers and their students. Indeed, student teachers might start by practicing using IRAs with one another and providing feedback to one another, move on to using them with their actual pupils, using video or audiotape to record the interaction, and listen or watch the tape with fellow students to assess together the student's knowledge of words, accuracy, comprehension, use of cognitive or metacognitive strategies, and understanding of words in and out of context. Student teachers might then be asked to write up a memo or short report on what the pupil seemed to understand, as well as areas of struggle and challenge, and recommendations for future in-class support or action with the student. While this practice draws upon many aspects traditionally taught in teacher education, such as a perspective on reading to construct meaning, an understanding of how children develop phonological and phonemic awareness, and oral fluency and comprehension, it brings these concepts to bear upon a particular strategy teachers could use immediately as new teachers.

In order to develop fluidity with these practices, novices will need multiple opportunities to enact them. As suggested above, these opportunities can occur across a variety of settings, from more controlled settings in the university through the more authentic settings of classrooms. The more laboratory-like settings provide the chance for novices to get immediate, targeted feedback on their early efforts to enact components of practice (cf. Grossman et al., 2009; Lampert & Graziani, 2005), which can help them hone their practice before entering the more authentic, but also more complex, setting of the K-12 classroom. In between the university course and the K-12 classroom, we might envision other kinds of 'designed settings' (Lampert, 2005)

intentionally created for novice learning. Think, for example, of the simulated patient experience that many medical students encounter in their training. As they learn to take histories and do a physical exam, medical students have the opportunity to practice these routines with a trained actor, who can simulate certain kind of problems for novices. In her work on the Dilit School in Rome, Lampert (2005) has described how novice Italian teachers have the opportunity to practice a variety of instructional routines for teaching linguistic problems, as the instructor intentionally makes the kinds of common errors learners might make and provides opportunities for novice teachers to respond to such errors, get immediate feedback from a highly skilled teacher, and try again.

Coaching

As suggested by the role of the instructor above, a shift toward pedagogies of enactment will also require skilled coaching on the part of teacher educators. The cultivation of skilled practice requires multiple opportunities to try out new routines, along with specific feedback about what is and is not working well (e.g., Ericsson, 2002; Schön, 1987). Such coaching and immediate feedback distinguishes medical residencies, in which newer physicians learn under the supervision of more experienced physicians, as well as other forms of clinical education, including training in clinical psychology, physical therapy, and the performing arts. Teacher education has generally left coaching to field instructors or supervisors, who provide feedback during field experiences. However, we argue that there is a place for coaching of instructional practice in the context of university coursework, and other designed settings, such as laboratories.

Feedback provided during coaching can help novices develop ways of seeing and understanding complex practices; feedback helps novices distinguish features of a complex practice that may be difficult to fully appreciate until one tries to enact the practice. Coaches must possess a form of 'professional vision' (Goodwin, 1994) that enables them to see these distinctions; through their coaching, they help novices see these features as well. One of the challenges for a teacher education organized around core practices will be to develop skilled coaches who are able to provide rich feedback on specific practices and routines for novice teachers.

Organizational challenges for teacher education

An emphasis on core practices and in particular pedagogies of enactment in teacher education challenges teacher educators to reconsider the structural elements of their programs. The rigid separation among and between methods and foundations courses, and between university courses and field placements could undermine any radical change that organizing teachers' learning around core practices invites. One could envision numerous ways in which programs might reorganize and restructure themselves to meet this challenge, but it is important to acknowledge some of the particular issues that may arise in such an effort. We highlight a few central issues related to the structure of programs we believe teacher educators must consider if they are to fully engage in such an effort.

First, teacher educators, including supervisors and cooperating teachers, within individual programs will need to agree on a set of core practices around which to organize the learning of preservice teachers. Since the 1990s, various scholars in

teacher education have called for programs to develop a clear vision of teaching and learning (e.g., Darling-Hammond, 2007). Many programs have responded by trying to develop explicit missions and visions that orient the work of teacher education. To some extent, this conceptual work has left the actual pedagogy of programs relatively untouched (McDonald & Zeichner, 2009). Although programs may develop an explicit vision or mission, teacher education faculty are left to enact that vision within their own course work independently. We think that a move to focus on core practices sets a high bar for teacher educators as it requires them not only to negotiate a specific vision of teaching and learning, but to negotiate how they will engage that vision pedagogically and programmatically around some very specific practices. For example in programs in which a fundamental aim is to address issues of social justice, teacher educators will need to decide what core practices will best leverage that broader purpose while also focusing preservice teachers' learning around more specific conceptual and practical tools. This argues for a very different vision of foundations courses that deal with issues of diversity and equity, for example.

Second, moving toward the implementation of pedagogies of enactment will require programs to reorganize many structural arrangements. Currently, programs appear caught in an 'add-on' mode of response when addressing calls for change in teacher education or when complying with policy directives. For example, many programs responded to calls for a greater emphasis on multicultural education by adding a course. Similarly, when asked to prepare teachers more effectively to work with English language learners a typical program response is to add a course (Lucas, Villegas, & Freeson-Gonzalez, 2008). And, when directed to better prepare teachers to teach reading, programs respond with additional course work in literacy. Over time, this tendency to 'add-on' rather than rethink has supported the balkanization of the curriculum of teacher education.

Organizing around a set of core practices strikes at the heart of this balkanization and challenges teacher educators to redesign programs in ways that allow preservice teachers to learn about the multiple aspects of teaching in an integrated fashion. However, the idea of organizing teacher education around a set of core practice does not magically rid individual programs of their own or the field's institutional history or currently accepted notions of how to structure the preparation of teachers. Teacher educators engaged in developing whole programs or aspects of programs around a set of core practices will encounter many of the historically documented implementation challenges faced by teacher educators. For example, programs attempting to implement this approach will still need to address the common challenge of connecting the core practices to individual preservice teachers' classroom experiences, in part to assist them in understanding the relevancy of the core practices to their own work. Perhaps, teacher educators might consider features of the realistic model of teacher education – by focusing initially on core practices that are related to those issues that are of particular concern to new teachers in their very early development – as they redesign programs.

Teacher educators will also have to be wary of the common problem of the theory–practice divide which could resurface in attempts to focus upon core practices. For instance, they will need to be wary of reproducing the divide in terms of who they assign to teach these practices (clinical faculty or practicing teachers as opposed to research faculty. To avoid problems of fragmentation or balkanization, teacher educators engaged in this work will have to intentionally resist the ease of simply orienting current course structures to attend to different aspects of a current

core practice or to separating the teaching of them by assigning them solely to adjuncts or practicing teachers. In doing so, teacher educators will have to participate in difficult discussions and decisions about what features of the current course curriculum can be set aside in an effort to focus more intently on a set of agreed upon practices. This may not require a complete dismantling of the course structure, but will likely require teacher educators to retrain themselves to consider the possibility that less coursework may lead to more learning for students. It may also require them to work together not only behind the closed doors of program meetings, but in the context of their own teaching as they consider in public, with preservice teachers, how perspectives from different areas such as multicultural education and mathematics methods, for example, are brought to bear in helping novices learn to orchestrate mathematical discussions.

Similarly, such an effort requires new thinking about the relationship between university courses and field placements. Pedagogies within teacher education that approximate particular practices likely demand that preservice teachers at the very minimum have opportunities to try out such practices within the context of their field-work. This new vision also requires that when they are trying on such practices preser-vice teachers have multiple opportunities for feedback from their cooperating teachers and supervisors, who have had opportunities to learn about and understand the complex nature of the practice itself. This relationship will also require that university faculty learn about and access preservice teachers' experiences in the field. This may demand that faculty at times teach in the context of K-12 classrooms, as is currently happening during 'studio-days' at the University of Washington, in summer schools at Stanford University, and in summer programs at the University of Michigan.

If teaching is indeed a complex practice, and not something that individuals will naturally develop on their own, then teacher educators must develop new approaches for preparing ordinary people, in an extraordinarily brief amount of time, to be prepared for the challenge. Organizing professional education around a core set of practices would challenge many of the existing structures within teacher education. As suggested above, teacher educators would need to develop their roles as clinical educators, able not only to profess about teaching, in the abstract, but also to provide the kind of skilled feedback and coaching that enables novices to improve. We would move away from a curriculum that symbolizes the separation of theory and practice through its division into foundations and methods courses toward a curriculum that puts practice at the center of all endeavors.

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