

Parsing the Practice of Teaching

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Abstract

Teacher education programs typically teach novices about one part of teaching at a time. We might offer courses on different topics—cultural foundations, learning theory, or classroom management—or we may parse teaching practice itself into a set of discrete techniques, such as core teaching practices, that can be taught individually. Missing from our courses is attention to the ultimate purpose of these discrete parts—how specific concepts can help teachers achieve their goals, or how specific procedures can help them achieve their goals. Because we are now shifting from a focus on bodies of knowledge to a focus on depictions of practice, this article examines our efforts to parse teaching practice into lists of discrete procedures. It argues that we need to pay less attention to the visible behaviors of teaching and more attention to the purposes that are served by those behaviors. As a way to begin a conversation about parsing teachers' purposes, I offer a proposal for conceptualizing teaching as a practice that entails five persistent problems, each of which presents a difficult challenge to teachers, and all of which compete for teachers' attention. Viewed in this way, the role of teacher education is not to offer solutions to these problems, but instead to help novices learn to analyze these problems and to evaluate alternative courses of action for how well they address these problems.

Keywords

practice-based teacher education, teacher learning, teacher education preparation

Over the years, teacher educators have tried several times to partition the fluid practice of teaching so that they could articulate its constituent parts, define the specific bodies of knowledge that are relevant to teaching practice, or define the practices that comprise teaching, or those things that comprise “good teaching” in particular. If such an analysis were available to us, we would be more able to converse with each other about our goals and to provide more coherent guidance to novices about their future work.

But we have never reached agreement on any partitions, for a variety of reasons. One problem has been finding the right “grain size” for parsing teaching practice. If we break practice into very small bits, our lists become too long and our curriculum crowded with minutia. However, if the partitions are too large, we may have difficulty clarifying individual parts in a way that helps novices “see” them. Another problem has been making individual parts meaningful, once they are isolated from the rest of teaching. We may define a collection of discrete actions without attention to the role these actions play in context. Yet another problem is that we might be able to identify specific parts of teaching but not be able to articulate why one version of this part is better than another. Finally, because our field is susceptible to fads, we may identify behaviors that are fashionable or valued at the moment, and then lose interest in them over time. Thus, we may stop teaching about a particular kind of task not because it lacks value to teachers but only because we are bored with it or take it for granted ourselves.

There are two versions of this “parsing problem.” One version appears when we decide our curriculum should focus more on knowledge; the other appears when we decide our curriculum should focus more on practice itself. Teacher educators have a long history of vacillating between these two approaches to curriculum, but they face the parsing problem either way. A good example of this can be seen in our last turn toward bodies of knowledge. Following an extensive focus on teaching behaviors through the 1960s and 1970s, the field of education turned in the late 1980s toward the role of knowledge in teaching. Much of this was stimulated by the writings of Lee Shulman (1986a, 1986b, 1987). As teacher educators began to think about the knowledge needed for teaching, more and more bodies of knowledge were identified. Whole books were published outlining relevant bodies of knowledge, typically with a chapter devoted to each domain. As time went on, the number of chapters in these books continually increased, going from 13 chapters (D. C. Smith, 1983) to 15 (Kennedy, 1989) to 24 (Reynolds, 1990) to 28 (Murray, 1996). Eventually, we reach a stage where so many bodies of knowledge are relevant to teaching that the curriculum of teacher education becomes unwieldy.

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We are now in a moment when we are retuning again toward the things teachers actually do, the visible practices of teaching, and again we are interested in finding a way to parse teaching practice into comprehensible parts. This question of how we parse teaching practice is the focus of this article. It has two main parts. In the first, I examine three different efforts to parse teaching practice into its constituent parts and I use these examples to illustrate the general problems associated with parsing teaching practice. In the second, I argue for an alternative approach, one that does not sort out the *visible behaviors* of teaching, but instead sorts practices according to their purpose and to how they contribute to overall lessons.

Three Ways to Parse Teaching Practice

Teachers Do Activities

Perhaps the earliest effort to partition teaching practice was the Commonwealth Teacher Training Study (Charters & Waples, 1929), a very extensive and intensive effort in the late 1920s to identify all the activities teachers did. Although the study has been defined as largely an attempt to list all the things teachers *do* (Forzani, 2014), its ultimate purpose was to help teacher educators construct a useful curriculum of *relevant knowledge*. The authors began with the premise that almost all knowledge ever produced could be relevant in some way to teaching, so that it was difficult for teacher educators to develop a curriculum that encompass the most relevant knowledge. Their solution was to list all the activities that teachers actually did, so that teacher educators could then identify knowledge that would be relevant to these particular activities.

To generate their list, the authors examined numerous job descriptions, asked a wide variety of teachers to list all the things they did, and asked teacher educators, school administrators, and others to contribute items that they thought teachers *should* be doing, even if these were not mentioned in job descriptions or by teachers themselves. In the interest of parsimony, they aimed for generic activities. That is, they preferred items such as “giving students assignments,” to a collection of items that included giving assignments in geography or history or biology, or giving assignments to second graders versus sixth graders versus tenth graders.

Despite this attempt at parsimony, their final list included 1,001 items, which they then sorted into seven broad categories: (a) classroom instruction, (b) school and class management, (c) supervision of extra-curricular activities, (d) relationships among staff, (e) relations with the school community, (f) professional advancement, and (g) maintenance of the school plant and supplies. Each of these categories was then further subdivided. For instance, the broad category of “teaching subject matter” is sorted into planning, setting objectives, selecting and organizing subject matter, developing interest, instructing, assigning work, providing opportunity for students to work, providing facilities for individual

study, and evaluating students’ needs and achievements. Finally, once they finalized their list of 1,001 specific activities, they then asked hundreds of teachers to rate each item for (a) how frequently they did it, (b) how difficult it was, (c) how important it was, and (d) whether they thought it should be taught in preservice teacher education. It took teachers 9 *hr* to complete this form.

Despite the effort that went into this project, according to Forzani (2014), the resulting list had little impact on teacher education curricula. But the effort is nonetheless instructive, for it illustrates many of the problems I listed above. For example, it suffered from two “grain size” problems, in that some items are too fine-grained while others are too broad. The category of “recording and reporting” illustrates the “too small” problem in that it includes over 100 discrete items. But at the other extreme are items that describe larger and more complex activities, like No. 62, “adapting assignments to the abilities and needs of the class,” or No. 98, “Teaching pupils to foresee results to be obtained,” or No. 85, “Teaching pupils to develop useful interests, worthy motives, and sincere appreciations,” all enormously complex tasks.

The list also fails to distinguish what *good teachers* do, as opposed to poor teachers. This was actually not an oversight, but was intentional. In fact the researchers felt they had made an important breakthrough by focusing on the activities themselves, rather than on how best to perform them, because they realized that best practices would likely vary across contexts. Elementary teachers would do things differently than secondary teachers, rural teachers differently than urban teachers. The brilliance of their approach, in their view, was to find a way to identify common teaching activities *independent* of students, settings, and subjects. They expected their audience, teacher educators, to know how techniques might vary across different types of settings, and to develop their curricula accordingly.

Finally, this list also illustrates the problem of meaningfulness. In part because items vary so much in their grain size, it is difficult to get any sense for the value or centrality of any given activity relative to teaching as a whole. Nothing is said about *why* teachers did any of these activities, how any activity contributes to any larger goal, or how important it is to the overall process called “teaching.” This was also not an oversight. The authors felt that the rationales for these activities were *subjective* and hence outside the boundaries of research. As they saw it, their audience of teacher educators had to take responsibility for inferring the purposes of these activities, for identifying any problems associated with each activity, and for identifying solutions to those problems. The curricula that their audience would develop, then, would in fact help teachers learn how to engage in these activities to achieve specific purposes.

Teachers Make Moves

Another effort to parse teaching practice arose in the 1960s and 1970s and focused more on discrete movements teachers made during the process of teaching. This line of work, called

process-product research, differed from the Commonwealth Study in several respects. First, process-product researchers focused exclusively on what teachers did *while interacting with students*. No attention was given to lesson planning, evaluating student work, or any other activities that might be considered part of the job, if these occurred outside the classroom. Second, instead of asking teachers or school administrators to provide lists of teaching activities, these researchers directly observed teachers as they were teaching, and tried to record the discrete moves that they saw teachers make. Third, these researchers were not interested in listing everything teachers did, as the Commonwealth researchers did. Instead, they wanted to identify moves that *mattered* somehow, that improved effectiveness. Each researcher had his or her own hypotheses about what kind of moves would likely be most valuable. One researcher might be interested in classroom management moves, while another might be interested in moves that would increase student motivation. Different observation instruments reflected these different theories, and all the observation instruments were all compiled so that researchers could see what specific moves that other researchers were actually recording (Simon & Boyer, 1967, 1969, 1970, 1974).

One group of researchers (Anderson, Evertson, & Brophy, 1979) even sought to test their theories experimentally. These authors reviewed the process-product literature and devised a list of 22 moves that were most associated with gains in student achievement. They then wrote a manual for teachers, describing these moves, and asked teachers to experimentally test these moves in their own classrooms for an entire school year.

Their “to-do” list differs from the Commonwealth list in several important ways. First, it has only 22 items, rather than 1,001. Second, this is not simply a list of things teachers are known to *do*, but rather a list of things that are known to be associated with student learning. Finally, this list is not merely descriptive. Almost every statement in this list includes the word “should,” implying that the intent was not to merely provide a job description, but rather to describe what *good* practice looked like. Furthermore, many statements also include a phrase explaining the rationale or purpose for the move, so that its role and relevance is clear. Here are some examples of their recommended moves, with their rationales italicized.

1. The teacher should use a standard and predictable signal *to get the children's attention*.
3. The introduction to the lesson should give an overview of what is to come *in order to mentally prepare the students for the presentation*.
5. The teacher should have the children repeat new words or sounds *until they are said satisfactorily*.
9. *To keep each member of the group alert and accountable at all times between turns*, the teacher should occasionally question a child about a previous response from another child.

The way these moves are phrased, then, is helpful to teachers in two ways. First, the moves themselves are very small and easy to see; but more importantly, their contribution to the overall the lesson is also articulated. This attention to the overall purpose of the moves clarifies their value for teachers and may have motivated them to try to implement them. In fact, teachers were able to follow this advice with very little help and to do so well enough to improve their students' achievement. The authors spent about 3 hr with teachers at the beginning of the year, explaining their list and giving teachers their manual explaining the various moves. With nothing more than that thin introduction, teachers were able to implement these moves, to sustain them for an entire school year, and to improve their students' achievement.

Notice, however, that these principles were mostly related to student management and motivation, not to substantive instruction itself, or to fostering learning per se. Recently, we have seen a new movement to parse teaching practices in a way that attends more to this issue: Core practices.

Teachers Enact Core Practices

The most recent attempt to parse teaching practice focuses on broader, more meaningful patterns of observable behavior, patterns that reflect widely recognized pedagogical approaches or styles of teaching. Some of the language we use to distinguish these patterns comes from everyday conversation, where we may say that a teacher is “lecturing” or that he or she is holding a “discussion,” or we might say that one teacher's practice is more “traditional” and another's is more “progressive.” In an effort to recognize the salience of these broader instructional patterns, several authors are advocating attention to *core practices* (see, for example, Ball & Forzani, 2009; Grossman, Hammerness, & McDonald, 2009). Right now, the field is in the midst of trying to articulate what a set of core practices might look like. One such effort at Stanford University convened groups of teachers within different subjects to identify core practices for teaching those specific subjects. Through these exercises, for example, history teachers identified the following core practices:

- Select and adapt historical sources
- Model and support historical writing
- Employ historical evidence
- Model and support historical reading skills
- Use historical questions
- Assess student thinking about history
- Engage students in historical research

- Facilitate discussion on historical topics
- Use historical concepts
- Set historical context
- Connect to personal/cultural experience
- Explain and Link Historical Content. (Fogo, 2012)

Notice that the practices in this list are not as small as the moves derived from process-product research; nor are they generic activities, as were generated by the Commonwealth study. Instead, these practices are defined conceptually, so that their meaning and purposes are more apparent. In this sense, core practices offer an important improvement over either of the other approaches to parsing that I outlined above.

Core practices are especially good at resolving the “grain-size” problem. These practices are typically larger than the kind of activities identified in the Commonwealth study and larger than moves identified by process-product researchers, yet still smaller than whole lessons. The Stanford project, for instance, identified 12 core practices for teaching history (Fogo, 2012) and 10 for teaching secondary science (Kloser, 2012). These units of practice are of a meaningful size that enables their role in a lesson to be more apparent. Novices could learn to recognize them and to appreciate why they are important.

Furthermore, the phrasing of these practices conveys that judgment is involved; this is not a list of parts that could be put together as jigsaw puzzle pieces are. To suggest that a core practice in teaching history is to “select and adapt historical sources” is suggest that this “practice” is a decision-making practice, not an imitative practice. Another advantage of this list is that these core practices can adapt to virtually any history lesson—an elementary level introduction to history or an advance secondary course, for in all cases, teachers would benefit from being able to reason about the things listed here.

But the notion of core practices still has weaknesses when we move to teaching preservice teachers. Even though the labels do a better job of conveying the meaning and significance of individual practices, efforts to teach novices about specific core practices can still become so procedural that their ultimate purposes are overlooked. Perhaps because of the physical and temporal separation between preservice teacher education and the realities of classroom life, preservice programs err toward overly didactic prescriptions. A good example of this problem appears in Ghouseini’s (2015) case study of a novice teacher called Linda. In one of Linda’s preservice courses, students were taught the core practice of “managing discussions” by further parsing it into a set of discrete moves such as, for instance, asking students what another student had just said, or asking students how many

agreed or disagreed with something another student said. These behaviors facilitate the general discussion and are discrete enough for novices to *see*. In fact, they are small enough to be considered “moves” like those studied in process-product research. But as Ghouseini watched Linda practice using these moves in the field, she found that Linda used them to achieve different purposes than Ghouseini had intended. For instance, when a student offered an *incorrect* idea, Linda was more likely to ask the class how many agreed or disagreed with the students’ idea. Conversely, when a student offered a *good* idea, Linda was more likely to ask another student to repeat what the first student had said. The bias in her use of these moves shows us that Linda had learned how to make these discrete moves, but that she didn’t have a complete understanding of their purposes. For Linda, the goal of the discussion was to get students to say correct sentences, whereas for Ghouseini, the goal was to ensure that students had fully thought through the underlying concepts so that they would be more likely to retain them. Linda’s use of these moves should not be surprising; many novices hold the naïve assumption that when students say correct sentences, they have learned the content. But one wonders, in this case, if Linda’s teacher educators spent more time pointing out what these moves *looked like* than they did on the *instructional purposes* of such moves.

When we define teaching by the visible practices we see, without attending to the role these practices have in the overall lesson, novices are likely to use their newly acquired practices at the wrong times, in the wrong places, or for the wrong reason. Clarity about purposes is especially important for novices because novices themselves hold many misconceptions about what teachers do and why. Their theories of action are often based on naive childhood perceptions of their own teachers, and our role as teacher educators is to help them develop a more sophisticated understanding of what teachers do. What novices need to learn is *why* teachers in the Commonwealth study tried to “adapt assignments to the abilities and needs of the class, *why* teachers in process-product studies “use predictable signals to get students’ attention,” and *why* ambitious teachers chose to “manage discussions.” This is what novices need to know.

Throughout our history, we have tried to define the practice of teaching in terms of lists of specific bodies of knowledge or lists of specific behaviors rather in terms of what those behaviors are intended to achieve. All the activities identified by the Commonwealth study, all the moves identified by process-product researchers, and all the core practices identified in the past half dozen years, parse teaching into a set of behaviors rather than a set of goals or purposes. Yet the teachers who were observed doing these things in the original studies did them because they served some instructional purpose. We have misplaced our focus on the *actions* we see; when what is needed is a focus on the purposes those actions serve. In the next section I propose such an approach.

An Alternative Approach to Parsing Practice

Learning to think about teaching practices in terms of their purposes in the overall process of teaching is especially important for novices because novices themselves hold naïve theories of action about what teachers do and why. For instance, their theories of action can be based on childhood perceptions of their own teachers, and our role as teacher educators is to help them develop a more sophisticated understanding of what teachers do.

But notice that shifting our language from terms of action to terms of purpose does not, by itself, ensure that we will find a coherent and useful language for parsing teaching. We can easily go awry and generate hundreds of things teachers strive to achieve, ranging from extremely broad goals such as “help students learn the curriculum” to extremely narrow and fleeting goals like “Get Frederick to stop poking Julio.” We still need a way to parse practice into a handful of important, meaningful, and analytically distinct purposes that teachers’ actions serve.

My proposal parses teaching behaviors according to five persistent challenges faced by virtually all teachers. I argue that most observed teaching behaviors can be understood if they are characterized as addressing one of these challenges, rather than characterized by the actions we observe. We need to help novices understand that the behaviors they see are simply one possible solution to a broad teaching challenge, and that other solutions are also possible. By focusing on challenges, rather than on solutions, we help novices learn to think strategically about how their actions address a larger purpose, rather than focusing on how to mimic a set of actions that they observe.

I argue that these five challenges are universal in teaching, and are intrinsic to the process of teaching, so that every teacher must address them. They cannot be avoided. Thus, they offer a useful framework for parsing observed behaviors, examining their purposes and evaluating their value.

Portraying the Curriculum

The first persistent challenge for all teachers is to portray curriculum content in a way that makes it comprehensible to naïve minds, and to decide how that portrait will be constructed from some kind of live activity that takes place in a specific space, uses specific materials, and occurs within a specific time frame. School curriculum content resides in textbooks, curriculum frameworks, and “scope and sequence” manuals. If students could (and would) learn content simply by reading these documents, there would be no need for teachers. But curriculum content is inherently inert, listed in books or charts. Curriculum portrayals, on the contrary, are live events. Thus, we see teachers provide demonstrations, pictures, movies, hypothetical problems, walked-through examples. We see them posing questions and answering questions

from students, and we see them asking students to engage in a variety of learning activities on their own—reading, solving problems, writing, gathering data, and so forth. For many observers of teaching, these activities are the essence of teaching, and we cannot say that someone is teaching if they are not portraying curriculum content for students.

The process of portraying content begins before the school year begins, when teachers first divide curriculum content into weekly and daily segments, bearing in mind when vacation breaks might interfere with learning. They then figure out how each day’s portion of content can be enacted in real time and in a real space—what events will occur, what materials will be needed, where students will sit, and so forth. Lesson plans, then, represent their strategy for enacting the curriculum, for converting a passive textbook into live activities.

Because portraits involve live actions, it should not be surprising to learn that teachers’ lesson plans are developed around *activities* rather than *topics* (Shavelson, 1983). When teachers enter their classrooms, they have in mind a specific sequence of events that will unfold in a specific way. Clark and Peterson (1986) refer to these plans as “activity flows.” Kennedy (2006) describes teachers’ plans as *visions*: Teachers anticipate which events might be interesting or boring, which concepts difficult to grasp, and what kind of alterations might rectify these problems. They also envision the physical space, who will sit where, where the materials will be, and whether everyone will be able to see a particular demonstration.

With respect to the age-old teacher education dilemma of parsing the things teachers actually *do*, two points are particularly important. One is that we would be hard-pressed to insist that any particular curriculum portrait was *the* correct or best procedure for teaching any particular bit of knowledge. That is, defining teaching practice in terms of persistent challenges does not imply any particular visible behaviors—no specific activities, moves, or core practice. If we observed multiple teachers teaching the same curriculum—say, third-grade mathematics, or tenth-grade biology—we would find tremendous variation in how particular concepts were represented for students. One teacher might use a physical example and show how it works, another might engage students in a thought experiment, another might put a diagram on the board, and ask students to label parts or speculate about how different parts work, yet another might ask students to engage in a group activity, and still another might show a video or simply write on the board. Even if teachers choose the same representation, they are likely to pose different questions or hypothetical problems as they enlist student participation. Even teachers who teach the same curriculum from year to year are likely to change their portraits over time, responding to the needs of their different classes or responding to their own need for variation.

A related point about this persistent challenge is that decisions about how to enact a given piece of curriculum content

entail a lot of personal and professional judgment. This is an important point for teacher educators, for it tells us that our programs *must be designed to facilitate these judgments*. We cannot simply show candidates a set of procedures and expect them to teach well. Our task must be to make sure that novices learn relevant criteria for evaluating different portraits, so that they can flexibly design their own portraits over time.

To that end, some researchers have sought to identify criteria for what constitutes a “good” portrait. Researchers have sought to clarify central concepts in different disciplines and to learn more about how students might misinterpret them, thus providing further guidance for teachers about potential pitfalls in their portraits (e.g., Posner, Strike, Hewson, & Gertzog, 1982; C. Smith, 2007). An important role for teacher educators is to help novices learn to think about how these different curricular concepts might be misunderstood and to evaluate the advantages and disadvantages of alternative ways of representing particular concepts.

Focusing on approaches to portraying a piece of curriculum dramatically shifts conversations about best practice away from prescribed moves and toward analysis of how well different alternatives serve this broader purpose. Rather than evaluating a teacher for whether he or she implemented the moves identified by process-product research, or whether he or she was correctly implementing core practices, we should evaluate a lesson according to how its content is portrayed, acknowledging that many portraits are possible, many are very plausible, and some are downright brilliant.

Enlisting Student Participation

The second persistent challenge that all teachers face stems from the simple fact that *education is mandatory but learning is not*. Thus, teachers face a captive audience, and sometimes a resistant audience. Teachers, Cohen (1988, 2011) reminds us, belong in a class of “human improvement” professions, like psychotherapy and fitness training, in which one’s success depends entirely on the clients’ willingness to improve themselves. If clients do not wish to learn, to lose weight, to improve their golf swing, or to save for retirement, then professional help will likely be ineffective. Similarly, teachers cannot succeed, then, unless their clients *choose to learn*.

Students may respond to their captivity in one of three ways: They may actively engage, they may actively resist, or they may *cooperate*, in the sense that they remain quiet and polite, but do not really engage with their lessons. If teachers are unable to foster active engagement, their second choice is usually to foster cooperation so that disinterested students don’t disrupt the learning of those who are actively engaged. I use the verb “enlist” rather than, say, “motivate” or “entice” to describe this challenge because teachers are rarely able to motivate or entice everyone in the class, and many teachers must settle for an alternative goal of at least gaining their passive cooperation.

Furthermore, even students who are willing to participate most of the time may still resist actively thinking about topics that are difficult to think about. School learning requires, what Kahneman (2011) calls, “slow thinking”; the kind of thinking that requires concentration and effort. In contrast, most of life outside the classroom calls for “fast thinking,” thinking that is reflexive and that allows us to jump to conclusions, rely on rules of thumb, or re-use a habit we used in the past. Fast thinking is easier and is the default method used by most human beings for most activities, thus rendering this second persistent problem of teaching even more difficult to solve.

Three principles of learning are relevant to the task of enlisting student participation. One is that, to retain what they are learning, students need to actually understand it (Bransford, Brophy, & Williams, 2000) and, to understand it, they need to actively think about it (Willingham, 2009). So teachers must find a way to engage their students with the content. They can’t simply recite it. Teachers may “walk through” problems on the board, leading students step by step to ensure that they understand the entire process, or they may choose, instead, to ask students to predict what will happen next, or why something just happened, pushing them to see and understand causal relationships. They may ask students to engage in their own explorations or experiments. These questions and prods are intended to help students to think about the underlying relationships and concepts that the teacher is addressing and increase the chances that students will see and understand those relationships.

The second principle of learning is that knowledge tends to be understood within the specific context in which it is learned (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990); so that students may have difficulty seeing the relevance of “school knowledge” to situations outside of the classroom. Thus, if a youngster learns geometry in a classroom, he might not see its relevance when he takes a job as an apprentice carpenter. He might face carpentry problems that could be solved with geometry, yet be unable to solve them because his geometry knowledge is in a separate compartment of his mind. At the same time, if a youngster learns geometry in the context of carpentry, she might not see its relevance to *drawing* such a structure, so that drawing tasks would continue to be difficult or even un-solvable.

These features of learning mean that the a critical factor in teaching is developing portraits of the content that help students “see” underlying relationships and help them “see” how the content relates to a variety of kinds of problems or situations. Imagine trying to teach students what a piano is, or how it works, if students never actually see or touch a real piano. A lecture about pianos could never be as powerful as the physical experience of seeing the mechanism, pressing its keys, and hearing the effect of that touch. This is not to say that teachers need to bring everything that exists in the world into their classrooms, but rather that they need to think hard about their portraits, for their choices can be consequential.

The third principle of learning is that students will remember those things they actively think about, so that teachers must make sure that the things they require students to think about are the right things. If learning activities are not carefully chosen, students will spend their class time thinking about issues that are tangential to the central concepts. If a learning activity is too complicated, for instance, students' attention is entirely taken up with procedural details rather than with substantive issues. Or if the learning activity is about a sub-issue, students might not focus on the main issue. Willingham (2009) illustrates this principle with this example: A teacher is teaching about the underground railroads that carried slaves from the south to the north prior to the civil war. The teacher said that slaves often lived on nothing but biscuits during these arduous trips because biscuits could be made on the road. He thought that an interesting learning activity for his students would be to try making biscuits themselves. But, Willingham noted, what the students had to *think about* in this lesson was how to make biscuits, not how slaves traveled or lived, so what they would *remember* from the lesson was how to make biscuits, not how slaves lived or traveled.

Notice that I have now listed two separate persistent challenges that all teachers must address, and notice too, that they are also inextricably tied together. Both must be addressed continuously and simultaneously and every lesson plan must consider both. But ensuring that both are *satisfactorily* attended is not easy, and in fact these two problems can compete for teachers' attention. For instance, the most accurate portraits might be relatively less engaging, and the most engaging activities might be less informative. Again, the role of teacher education can't be to present teachers with specific solutions to either of these challenges, but must instead be to help them understand the overall problems and the tension between them, so that they are better able to devise their own solutions in the future.

Exposing Student Thinking

The third persistent challenge facing teachers is that they can never be certain what their students understand, don't understand, or misunderstand, so that teachers must continually find ways to expose their students' thinking. This problem is probably the least apparent to policy makers and education critics, who may not realize that if teachers don't know what students understand at any given moment, they can't know whether to repeat, whether to elaborate, or whether to move on.

Many school districts try to help teachers learn what their students know by testing students intermittently throughout the year and providing teachers with these test results. But the most useful knowledge for teachers is the knowledge they have *in the moment*, for this knowledge can guide their actions in the moment. Each day's lessons follow from the lessons taught the day before, and students need to grasp essential points from each lesson if they are to make sense of

the next lessons. When teachers receive their end-of-unit test results, the unit is typically finished and teachers have fewer options for resuscitating earlier lessons.

Thus, we see teachers asking students to solve problems, share their findings, respond to one another's ideas, read aloud, show their work, turn in assigned projects for review, and so forth. These interrogations are especially visible in elementary classrooms, where teachers use a constant question-and-answer format both to maintain students' attention and to assess their understanding. Sometimes we see them orchestrate more complex projects such as debates or parallel experiments that allow them to watch students as they develop their own nascent ideas.

An important and relatively less-understood aspect of the need to expose students' thinking is that it becomes more and more challenging as the social distance between the teacher and students increases. Jackson (1986) made this point by comparing classroom teachers with a television "teacher," such as the host of a cooking show. The cooking show host can assume that his audience is similar to himself: Both host and audience are adults, both own their own kitchens and cooking gear, both are interested in cooking and both are motivated to learn. With this audience in mind, the TV host can simply present his content without needing to read his audience's mind. But as the distance between the teacher and the student grows larger, teachers must make a more concerted effort to ferret out the unique interests, perceptions, and interpretations of their audiences. Social distance grows as students become younger, come from different social classes or cultural groups, speak different languages, live in different family structures, or have learning disabilities that the teacher has not experienced. In all of these cases, teachers must work harder to interpret their students' words and actions and make sure they understand how their students are making sense of their lessons.

This need to expose students' thinking is also made more difficult by the sheer variation in how students make sense of new ideas. Generally speaking, we all make sense of new ideas by connecting them to things we already know. Students who enter with different prior experiences are likely interpret the content in different ways as they each struggle to make sense of it and to connect it to their own prior knowledge and experiences. A roomful of highly engaged students is actually a roomful of different ideas, conceptions, confusions, questions, and insights, so that the teachers' task calls to mind the popular analogy, *herding cats*. In such a situation, exposing student thinking is essential, and is inherent to the job.

Containing Student Behavior

The fourth persistent challenge facing all teaching is that of containing student behavior. Teachers need to contain student behavior not only as a matter of public safety but also to ensure that students are not distracting each other, or distracting the teacher, from the lesson. The need to contain student

behavior is widely acknowledged by policy makers and education critics, and most teacher education programs also include a course on classroom management.

Classrooms contain from 20 to 40 students in a relatively confined space. Furthermore, these students are more energetic and restless than adults, and less able to control their own behavior. They are more interested in one another than in the lesson. An early portrait of life in classrooms (Jackson, 1968/1990) pointed to crowdedness as a central feature that life. Crowdedness means that students are continuously interrupting each other. Most teachers contain their crowds by creating a system of standardized rules and routines that define where things are kept, when students may be out of their seats to sharpen pencils or use the restrooms, when and how materials can be accessed, how desks and students are arranged, how materials will be distributed and retrieved, where to go with lost or found items, how homework can be made up following absences, and so forth. This underlying organizational system is typically introduced at the beginning of the year and persists throughout the year. It enables crowds of restless students to coordinate their actions without having to ask the teacher for permission for every move they want to make.

Along with this general system of rules and routines, however, there is also a process of continual oversight and reminders. Teachers remind their students not to poke their neighbors or pull out their cell phones, and they often try to intercept potential disruptions before they become real disruptions. One early researcher (Kounin, 1970) set out to study what he called “desists,” meaning teacher actions intended to stop misbehaviors. But on observing teachers in action, he discovered that much of their classroom management consisted of *prevention* of misbehaviors rather than stopping misbehaviors once they had begun. He noticed that teachers continuously demonstrated to students that they were aware of, and paying attention to, what everyone was doing. These communications themselves often discouraged misbehavior. A teacher might say, “So you can see that the area of this triangle, Christina, is . . .” The teacher is speaking to the entire class, but simply by mentioning one student’s name, she warns the named student to settle down and she reminds all the other students that she is alert to their individual actions.

Notice, again, though, that this problem interacts with from the others. Teachers’ can’t address this one first, and then move on to the others, nor address the others first and then move to this. All four are continually present in classrooms and all four must be addressed simultaneously and continuously. Furthermore, all of these are so deeply embedded in the work of teaching that if a teacher failed to address any one of these challenges we would likely not be persuaded that a teacher was, in fact, *teaching*. He or she would not be teaching if he or she were not portraying curriculum content, if students were not engaged, if she was unaware of what

students were thinking, or if their behavior was not sufficiently contained.

Accommodating Personal Needs

The fifth persistent challenge teachers face is finding a way to address the first four problems in a way that is consistent with their own personalities and personal needs. Some teachers, for instance, may feel a need for an orderly classroom, while others may prefer a more spontaneous classroom. Some may need to reduce the overall volume of noise students make and still others may enjoy a higher level of energy. These are matters not only of personal taste, but often of personal need as well. If a teacher cannot find a way to create an atmosphere that he or she is comfortable living in, he or she is not likely to remain teaching for very long.

This is a topic we rarely address in teacher education but we should. We tend to focus on content, teaching techniques, and learning theories, all relevant to the work, but we do not address the fact that teaching is intensely personal and interpersonal work. Yet we do know that attrition from teaching remains persistently high. One way we could help novices better adapt to their chosen profession is by being more clear about the full set of challenges that are intrinsic to it, but also more clear about the variety of ways these challenges can be met and the importance of finding strategies that are consistent with their own personal needs.

An Integrated Portrait of What Teachers Do

The portrait of teaching practice laid out here makes no reference to any specific activities, moves, or practices. Instead, it portrays teaching as an integrated practice in which each lesson represents a unique solution to five inherent challenges that all teachers must address. When we observe a lesson, we are observing one particular way of portraying the curriculum, containing student behavior, enlisting student participation, and exposing student thinking. No lesson represents the only way these various challenges can be addressed, nor even the best possible way that they could be addressed; rather, each lesson represents one of many possible solutions.

A complete definition of what teachers *do*, then, might look like this:

- They portray curriculum content in a way that renders it comprehensible to naïve minds;
- For students who are not necessarily interested in learning;
- And whose grasp of the content is not readily visible to the teacher;
- And who are restless and easily distracted;
- In a way that satisfies the teachers’ personal needs.

Another central point about these five persistent challenges is this: They compete with each other in such a way that solutions to one may interfere with success in another. For instance, if efforts to contain student behavior become overly heavy-handed and restrictive, they may reduce students' willingness to participate. On the other side, if students become excessively enthusiastic, they are likely to become more energetic and rowdy, thereby exacerbating the teacher's need to contain their behavior. In her qualitative study of teaching practices, Kennedy (2005) points out that even though teachers claimed they wanted enthusiastic student participation there was a limit to how much enthusiasm they really wanted, for enthusiastic youngsters are also boisterous and noisy. Thus, teachers sought a modicum of engagement, just enough to maintain student attention but not enough to energize them too much.

Furthermore, teachers must continually re-think their solutions to these multifaceted challenges. Each new student, each new group of students, and each new topic to be taught, requires teachers to think anew about how they will portray curriculum content in this new situation, how they will foster engagement in this new situation, how they will expose their students' thinking in this new situation, and how they will contain student behavior in this new situation.

Finally, despite how well teachers design their lessons, they still need to make continual adjustments within each lesson as they see students' attention wander, see that students have misunderstood a concept, or see that students are getting restless. An early review of literature on teachers' interactive decision making (Clark & Peterson, 1986) found that teachers make ad hoc decisions roughly every 2 or 3 min throughout their lessons. They rarely weigh alternative courses of action, but rather respond spontaneously to events as they are unfolding. Kennedy's (2005) examination suggests that these decisions are usually responses to something that is perceived to be amiss. She found that teachers tended to simultaneously monitor different aspects of the lesson—classroom orderliness, students' attention, what students appear to understand or to misunderstand, and so forth, and whenever an event raised a red flag about any one of these issues, teachers immediately adjusted their behavior to respond to that concern.

Teachers' portraits also vary from day to day not only to accommodate changes in the content, available materials, and available time but also to retain student interest. If teachers found a lesson pattern that perfectly balanced among their four persistent problems, and began using that pattern every day, it would eventually cease to function well because students would become bored by it.

My central argument in this article is that novices cannot persist as teachers unless they find a way to address all five of these challenges, that all of them are difficult, and that all five are inherent to the work of teaching. We would not say someone was teaching if his or her students were not learning, and students cannot be said to be learning unless teachers portray

the curriculum in a way that engages them with that content, reveals their thinking about the content, and contains their distracting behavior. And teachers will not continue to teach for long unless they find a way to do these things that is compatible with their own personal needs.

Role of Teacher Education

The field of teacher education has been contentious since its inception, as actors within the field and outside of it argue about what we should be teaching and why. But we also face several important challenges of our own when it comes to developing a credible curriculum and pedagogy for preparing teachers.

One challenge we face is that our programs reside in colleges and universities that are designed to impart *bodies of knowledge*. Colleges and universities are good at presenting bodies of knowledge to students and they are good at measuring students' grasp of these bodies. They are also good at partitioning knowledge into portions that can be taught within 3-credit semester-long courses. The value universities place on bodies of knowledge means that faculty members tend to be valued for their mastery of a particular body of knowledge more than for their ability to teach or for their firsthand experience confronting the challenges of practice outlined here. When faculty are valued for their own mastery of a body of knowledge, they tend to teach that body of knowledge, and they may do so without any attempt to link it to the problems teacher candidates will face as teachers. This means that many teaching candidates can be exposed to bodies of knowledge that are relevant to teaching, but they may never grasp the relevance of that knowledge or connect it to the problems they will face in their classrooms.

Associated with our expertise-driven culture is a focus on solutions. When we do research, we seek solutions to problems, and when we teach, we teach about the solutions we have discovered over time. Even if our solutions change over time, they are always taught with certainty. Thus, at one time we teach teachers about direct instruction, at another we teach them how to use cooperative groups, at another we teach lesson study, and at yet another we teach core practices. These are all plausible solutions to one or more problems of practice but we often fail to discuss the problems themselves. Instead, we present these solutions as if these are the only possibilities available. But what novices need to learn is that none of these solutions can repeatedly satisfy all of the persistent challenges they will face. They must learn to understand them individually, understand that they conflict with one another, and understand that their task, each day, is to find the most optimal solution to their five-part problem for the particular lessons they will teach that day.

Another challenge we face is that our students come to us with their own naïve conceptions about what teaching practice entails and with a naïve confidence in their own ability to do that job. They tend to think that teaching comes naturally,

because as childhood observers they haven't seen teachers' thinking, their anxieties, or their decisions. They often believe their teaching success will depend on their personalities, and believe that they are already endowed with the kind of personality that will win over their students and motivate students to cooperate and participate. What novices need to learn is (a) that the practice of teaching requires them to simultaneously address the five persistent challenges listed above, (b) that these challenges compete with each other and that teachers will need to continually balance among them, and (c) that specific activities which can solve one challenge can also exacerbate others. They need to learn how to reason about practice in a way that overcomes their naïve expectations.

Yet a third challenge we face is that our students are not yet working in classrooms of their own, so that virtually everything we may say inside a teacher education classroom refers to something imaginary or hypothetical. As they listen to our lectures, they may envision something quite different from what we intended. Thus, it is very easy for students to misunderstand the meaning and import of the sentences they hear. For this reason, it is imperative that teacher educators find ways to present their ideas in the context of real-time episodes of teaching, by using case descriptions, scripts, or videos. This in itself creates a temptation to point out the "right" practices. A reliance on videos can inadvertently lead to an over-attention to what the videotaped teachers are *visibly doing*, instead of attending to the goals and problems that motivated those actions and to the trade-offs inherent in specific actions.

Finally, the job our graduates will do can be quite various. Our country does not have a single curriculum, or even a single curricular tradition. Some schools may design their curriculum to provide students with applied, practical knowledge; others seek to provide moral or spiritual guidance, and still others seek to foster reasoning and citizenship. Our school districts are numerous and varied, relying on widely differing theories of teaching and different methods for evaluating teachers. This cultural and administrative context further exacerbates our efforts to prepare teachers coherently for their future work.

The challenge facing teacher educators, then, is to devise a curriculum and pedagogy for teacher education that (a) is defined in terms of bodies of knowledge so that it fits in a university context, (b) explicitly addresses the persistent challenges of teaching so that it can overcome novices' naïve conceptions of teaching, and (c) relies heavily on representations of teaching practice that enable novices to learn to see the relationships between means and ends.

This challenge may be more a problem of pedagogy than of curriculum topics. We need pedagogies that engage students in reasoning about practice, rather than merely telling them about bodies of knowledge or prescribing a set of practices for them to adopt. This is a non-trivial challenge because of the cultural value that universities place on expertise-as-solutions to problems, and because of our physical separation

from the world teachers will face when they leave us. However, some university researchers are working on developing just such a pedagogy (Windschitl, Thompson, & Braaten, 2011). These authors were confronting problems very like those I have outlined here. They wanted to help novices learn to reason about practice so that they could generate their own solutions to the problems they face. In particular, they wanted their students to attend to the relationship between student thinking, on one hand, and their methods of portraying curriculum content on the other. To stimulate this thought, they relied heavily on classroom artifacts such as student products and they developed a pedagogy that emphasized collaborative inquiry among novices. This pedagogical approach focuses on reasoning about teaching more than on specific prescribed techniques and the authors were able to demonstrate that their students could engage in such reasoning.

Approaches such as this one need more demanding experimental tests, but the institutional constraints facing preservice teacher educators make it difficult for us to formally experiment with alternative pedagogies. One place where we can learn about alternative pedagogies, however, is in the arena of professional development (PD), where researchers have been able to formally test alternative pedagogies. In a forthcoming review of experimental literature on PD, Kennedy (in press) sorts PD programs into four pedagogical approaches. Two approaches were more didactic and reflect the approaches most commonly used in preservice teacher education. In one, bodies of knowledge are presented and in the other, specific teaching procedures are presented. Perhaps because these pedagogies are more didactic, they have been widely used in preservice teacher education.

But PD programs also employed two other approaches that are rarely used in preservice teacher education. One was to provide teachers with *strategies*. Strategies, as defined by the Kennedy (in press), can be just as procedurally detailed as prescriptions are, but they differ in that they are defined by their goals or purposes, rather than by the visible actions alone. For example, McGill-Franzen, Allington, Yokoi, and Brooks (1999) provide kindergarten teachers with a set of strategies for engaging children with books even though the children could not read. Their goal was to increase student motivation to read. Strategies for achieving this goal included the physical design of the classroom, the use of displays, reading aloud, sorting books into "collections" based on themes, and incorporating literacy activities during play. By offering teachers a variety of methods for achieving the same goal, the focus of the PD was always on the goal and teachers could use their own discretion about which specific practices they would use to choose to pursue that goal.

The other alternative pedagogy was called "insight," by which Kennedy meant that professional developers tried to help teachers learn to interpret classroom events differently and attend to different signals. For example, in one program (Roth et al., 2011; Roth, Taylor, Wilson, & Landes, 2013), the professional developers relied on videos of science lessons

and asked teachers to pay attention to two different “story lines”: a curriculum story line (i.e., how scientific ideas unfold throughout a lesson) and a student-thinking story line that focused on how students’ understanding of the science content appeared to develop throughout the lesson. These insights helped teachers learn to interpret their own classroom events differently, to think more strategically about these events, and make more sense of how their students were responding to their lessons. Teachers were also given new strategies that would help them improve their own science instruction.

These latter two pedagogies, then, differ from traditional preservice teacher education in that they do not recite knowledge or dictate practices to teachers, but instead engage teachers in more analysis and exploration of alternatives. This distinction was important to the eventual success of these programs. The most important finding from this review was that programs using these alternative pedagogies were generally more effective at raising student achievement than were the didactic programs that focused on either bodies of knowledge or specific teaching practices. This is an important message for preservice teacher education, where we tend to vacillate between knowledge and procedures, but to be relatively didactic in either case.

Conclusion

As teacher educators, we have never agreed on a curriculum for teacher education. Over time, our programs have vacillated between providing the knowledge and dispositions that are prerequisites for teaching, on one hand, and on the other, detailing the specific practices that teachers should be using. In either case, we err toward didactic instruction, presenting our knowledge and our recommended practices as conclusive. In so doing, we may fail to help novices see a connection between our conclusions and the problems they face in their own classrooms. We may teach bodies of knowledge such as socio-cultural theory, learning theory, or motivation theory, all of which are relevant to teaching, and yet fail to connect these bodies of knowledge to any specific teaching problems, so that teachers retain these bodies of knowledge as compartmentalized and separate from their experience. Or we may define and demonstrate a variety of specific teaching procedures such as those identified by process-product researchers or those identified by core practices researchers, yet fail to clarify what these procedures are for, how they enable teachers to achieve their larger purposes, or how they could be adapted to respond to in different circumstances.

This is not an either/or decision. I am not proposing that we abandon specific practices in favor of problem solving strategies. Instead, I argue here for (a) *less* attention to bodies of knowledge, (b) *less* attention to specific teaching behaviors, and (c) *far more* attention to the persistent challenges that comprise teaching and to how our knowledge and recommended core practices can address those problems. We

need to help novices understand how both knowledge and procedures are relevant to the kind of problems they will face. But we also want them to understand the persistence of these problems and help them learn to think more analytically about them. The university format, of 3-credit semester-long courses, encourages us to parse our knowledge into discrete bundles, to parse practice into visible actions, and to engage in didactic pedagogies that do not help students learn to weigh alternative actions in relation to their ultimate goals. This is no simple task in a university setting, where expertise is valued and we are all rewarded for articulating solutions rather than articulating problems.

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