

## **On Making Determinations of Quality in Teaching**

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### **“New reform wave focuses on teacher quality”**

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People differ about Quality, not because Quality is different,  
but because people are different in terms of experience.  
*Zen and the Art of Motorcycle Maintenance*

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This paper explores the notion of quality as it applies to classroom teaching. Of particular interest is a determination of what is asserted or implied when it is claimed that an instance of teaching is quality teaching. Explorations of this kind are never easy. There are, as we shall see, many complexities to be encountered and resolved. And there is some danger—at least from a literary point of view. The hero in Robert Pirsig's *Zen and the Art of Motorcycle Maintenance* is driven insane as a consequence of pursuing an answer to the question, “What is quality?” Unable to find solace in Western conceptions of quality, he eventually turns to the millennia-old *Tao Te Ching*, which speaks of quality in these terms:

Not by its rising is there light

Not by its sinking is there darkness

Unceasing, continuous

It cannot be defined

.....

Meet it and you do not see its face

Follow it and you do not see its back

Given the elusive and contested nature of quality, is there any sure way to tease out the characteristics and properties of quality teaching? A simple answer is that there must be, for so many of us appear to be deeply engaged in doing it. Yet one wonders whether, if in the doing of it, we are not more like U.S. Supreme Court Justice Potter Stewart, who remarked that though he may not be able to define pornography, he knows it when he sees it. Perhaps we cannot define quality teaching, but we know it when we see it.

Recognizing something as an exemplar, as a well-crafted or superbly performed instance, almost always calls for discernment, “keen insight and good judgment” as the third edition of the *American Heritage Dictionary* defines ‘discernment’. What constitutes the keen insight and good judgment needed to pick out instances of quality teaching? Can we “unpack” the conceptual subtleties and nuances of quality teaching so that we can proceed in consistent and systematic ways to identify and foster it, or are we required instead to acknowledge its elusive nature and depend upon some sort of cultivated intuition to reveal quality teaching?<sup>1</sup> To paraphrase the *Tao Te Ching*, can

we see the face and back of quality? That is the question that sustains and guides this inquiry.

### **I. Examining the Meaning of Teaching**

Before trying to identify the characteristics of quality teaching, it would be well to be clear about what is meant by just plain teaching. It would be odd, would it not, to embark on a search for a superb example of a thing if we had no idea of the thing itself? Thus we want to know what teaching is, and then ask whether we can form some notion of what is involved in doing it well. Some years ago, one of us worked out a reasonably serviceable notion (Fenstermacher, 1986), which we will adopt as a starting point for this analysis. It is as follows:

- (1) There is a person, T, who possesses some
- (2) content, C, and who
- (3) intends to convey or impart C to
- (4) a person, S, who initially lacks C, such that
- (5) T and S engage in a relationship for the purpose of S's acquiring C.

Note that this definition of teaching does not stipulate that the student learns anything as a result of what the teacher does. It requires only that T have the intent to convey C to S, and that T and S are in relationship whose purpose is to accomplish this intention. S need not actually acquire C for T to be engaged in teaching. Thus the definition leaves unresolved two possible senses of teaching. They are what Gilbert Ryle (1949) called the task and achievement senses of a term. If we understand

teaching in its task sense, then the teacher need only try to bring about learning on the part of the student in order to be said to be teaching. This task sense is reflected in the definition of teaching just offered. If, on the other hand, teaching is taken in its achievement sense, then the student must learn what the teacher is presenting in order for the teacher to be said to be teaching. This requirement for learning would add a new line to the definition above: (6) S acquires C to some acceptable or appropriate level.

Task and achievement senses are found in many different words in languages throughout the world. In English, for example, one can hunt (task) for something, and find it (achievement). One can race (task) and perhaps even win (achievement). One might try one's hand at selling (task), leading to someone buying (achievement) what you are selling. In each of these cases, the task words are different from the achievement words (hunt/find, race/win, sell/buy) so that the ambiguity of the language is not very apparent. But note the term "sell," as it can mean that a sales person tries to sell cars, or actually does sell cars. If I tell another that I sell cars, I am clearly implying that this is something I try to do, and, unless I am quite new to the work, I am also saying that I have actually sold at least some cars.

"Teaching" has a close conceptual affinity to "selling" insofar as both are ambiguous with respect to task and achievement. It seems, in the case of selling, that we do not always have to make a sale to be selling, but that, over some period of time, we have to make some sales in order to say that we are engaged in selling cars. So, too, in the case of teaching. We frequently employ the term in its task sense, wherein we refer to activities engaged in with the intent to bring about learning, yet such learning

does not always follow. However, at some point we must give up saying that we are involved in teaching (in the task sense) if no learning ever follows from our actions (the achievement sense). What is the point where it is no longer acceptable to say we are teaching when no learning follows from our efforts?

We do not know (but we suspect it varies with context<sup>2</sup>). We raise the point not to explore it in depth but to demonstrate how intimate is the link between teaching and learning. How easy it is to come to believe that because we cannot teach forever without someone learning as a result, it then follows that we cannot be teaching *if no learning is occurring*. This point seems simple enough, and perhaps because of its simplicity, it is enormously beguiling. We slide from understanding that to teach in the task sense requires some acknowledgment of the achievement sense to concluding that one can be teaching only when the students are learning. Or, more accurately, one can be teaching well only when the students are learning.

Note this last claim, for it brings us back to the matter of quality. Quality teaching could be understood as teaching that produces learning. In other words, there can indeed be a task sense of teaching, but any assertion that such teaching is quality teaching depends on students learning what the teacher is teaching. To keep these ideas clearly sorted, we label this achievement sense of teaching *successful teaching*. Successful teaching is teaching understood exclusively in its achievement sense. This said, the question is whether successful teaching is what we mean by quality teaching.

Distinguishing Successful Teaching from Quality Teaching

No, it is not. How can we be so sure? Consider teaching school children how to kill with a single blow to the head, to loot without being apprehended, or to cheat without being caught. The children learn these lessons quickly and completely. Very successful teaching. But would we call this quality teaching? Perhaps. But it appears more likely that we would withhold the quality mark from examples of this kind of teaching. Consider a different twist: Suppose the content is appropriate, as in the case of teaching the causes of WWII, how to calculate the mass of an electron, or demonstrating the correct use of predicate nominatives. Surely if the teacher succeeds with this content, it is quality teaching. But suppose the teacher beats the children into attention, or drugs them so they are docile, or tempts them by dispensing illicit favors for top performers? Again we see that teaching may be successful, in the sense that all the students learn well what is being taught, but we withhold a judgment of quality because we are sure the methods used are improper, even immoral.

These examples show that there is something more to a judgment of quality teaching than simple learning. Quality teaching, it seems, pertains to what is taught and how it is taught. The content has to be appropriate, proper, and aimed at some worthy purpose. The methods employed have to be morally defensible and grounded in shared conceptions of reasonableness. To sharpen the contrast with *successful teaching*, we will call teaching that accords with high standards for subject matter content and methods of practice *good teaching*. Successful teaching is teaching that yields the intended learning. Good teaching is teaching that comports with morally defensible and rationally sound principles of instructional practice (we offer more detail

on these features of teaching later in this essay). Thus teaching a child to kill another with a single blow may be successful teaching, but it is not good teaching. Teaching a child to read with understanding, in a manner that is considerate and age-appropriate, may fail to yield success (a child who reads with understanding), but the teaching may accurately be described as good teaching. Good teaching is grounded in the task sense of teaching, while successful teaching is grounded in the achievement sense of the term.

The distinction between successful and good teaching leads naturally to the question of whether quality teaching might be some combination of good and successful teaching. Certainly there is a strong temptation to draw this conclusion, but the argument is fraught with complexities. To fully appreciate this point, we must take up for a bit the concept of learning.

### **On Learning and its Connection to Teaching**

The standard cases of teaching and learning require at least two persons, one who teaches and one who learns. For the sake of argument, consider that these activities are quite distinct; that teaching is an endeavor of one kind, performed by a person (T), while learning is an endeavor of a different kind, performed by a person other than the one teaching (S). Now ask what must be the case if the learner is not only to engage the tasks of learning, but succeed at them (note that there is a task and achievement sense to 'learning', as there is to 'teaching'). While there are any number of answers to this question, offered by learning theorists, sociologists, economists,

political leaders, school administrators and teacher's unions, to name a few, we propose the following:

1. Willingness and effort by the learner
2. A social surround supportive of teaching and learning.
3. Opportunity to teach and learn
4. Good teaching

Note that good teaching is but one of four “ingredients” in our mix. The others are that the learner desire to learn and expends the necessary effort to do so; that the social surround of family, community, and peer culture support and assist in learning; and that there are sufficient facilities, time and resources (opportunities) to accomplish the learning that is sought. The point of introducing this list is to clarify that learning, if it is to be both good and successful, calls on a cluster of conditions, only one of which pertains to the nature of the teaching received by the learner.

Just as teaching requires effort, competence, and forms of support, so does learning. There is a tendency among some U.S. educational theorists to think of learning in terms of a Lockean *tabula rasa*, wherein the teacher simply writes the content to be learned upon the blank slate of the mind contained within a passive, receptive student. If we presuppose a blank, receptive mind, encased within a compliant and passive learner, then we need travel only a very short logical distance to infer that teaching produces learning, and hence that what teachers do determines whether students learn.

On the passive recipient view, it makes some sense to think of successful teaching arising solely from the actions of a teacher; i.e., learning on the part of the



student is indeed a result of actions by a teacher. Yet we all know that learners are not passive receptors of information directed at them. Learning does not arise solely on the basis of teacher activity. It arises when the conditions noted previously are in effect.

As such, successful teaching is not so much about a particular kind of teaching as it is about a particular kind of setting or context for teaching and learning. Good teaching, in contrast to successful teaching, is about the particular kind of teaching, and is far less anchored in context (although it is worth noting that good teaching is, to a considerable extent, enabled by and responsive to settings of a certain kind).

What follows from this analysis, in our view, is that the expression “quality teaching,” as it so often occurs in everyday discourse, is not so much a description of the activities of a teacher as it is an expression indicative of a specific environment for teaching and learning. Quality teaching is what you are most likely to obtain when there is willingness and effort on the part of the learner, a supportive social surround, ample opportunity to learn, and good practices employed by the teacher. This point is sufficiently provocative to merit a bit more exploration.

### Connecting Quality Teaching and Learning

Quality teaching, we argue here, consists of both good and successful teaching. By “good teaching” we mean that the content taught accords with disciplinary standards of adequacy and completeness, and that the methods employed are age-appropriate, morally defensible, and undertaken with the intention of enhancing the learner’s competence with respect to the content studied (a separate section on the notion of good teaching is just ahead). By “successful teaching” we mean that the learner

actually acquires, to some reasonable and acceptable level of proficiency, what the teacher is engaged in teaching. Such learning is more likely to occur when good teaching is joined with the other three conditions (willingness and effort, social surround, and opportunity). Viewing quality teaching in this way permits us to isolate the various factors contributing to successful learning, and proceed to make an appraisal of these different factors.

One of these factors—good teaching—is of special interest here, for it is so often confounded with other factors critical to learning. There is currently a considerable policy focus on quality teaching, much of it rooted in the presumption that the improvement of teaching is a key element in improving student learning. We believe that this policy focus rests on a naive conception of the relationship between teaching and learning. This conception treats the relationship as a straightforwardly causal connection, such that if it could be perfected, it could then be sustained under almost any conditions, including poverty, vast linguistic, racial, or cultural differences, and massive differences in the opportunity factors of time, facilities, and resources.

Our analysis suggests that this presumption of simple causality is more than naive, it is wrongheaded. Only one factor in the four critical factors for learning goes directly to the activities of the teacher, and this factor is whether or not these activities constitute good teaching. As such, the teacher may be viewed as having a kind of limited liability for the success or failure of the learner to acquire the content taught. Assuming that our analysis is correct, policy initiatives addressing quality teaching could address any or all of the four factors for learning. Improving the quality of what the teacher does is only a part of improving the quality of what the learner learns. It is,

however, a most important part; one that deserves further scrutiny, which we shall give it momentarily.

### Recapitulation

We began by setting out a conception of teaching wherein one who knows some content engages in a relationship with one who does not, for the purpose of conveying the content from the one to the other. This view of teaching resolves the ambiguity of the term 'teaching' with respect to task and achievement by opting for the task sense of the term. As such, teaching can be said to be taking place even though no learning follows. In cases where learning is required for teaching, then it is the achievement rather than the task sense of teaching that is operative. When teaching in the task sense is done well, we called it good teaching. When teaching results in learning, we called it successful teaching.

We pointed out that not all instances of good teaching are successful, nor are all instances of successful teaching good teaching. Indeed, considerations of successful teaching took us into the domain of learning, where it became apparent that successful learning (in the context of schooling) requires more than teaching of a certain kind. Learning also requires willingness and effort on the part of the learner, a supportive social surround, and opportunity to learn through the provision of time, facilities, and resources. These features of learning add greatly to the probability that teaching will be successful. When teaching is both successful and good, we speak of quality teaching, in the sense of placing a high value or regard upon such teaching.<sup>3</sup>

This analysis pinpoints aspects of teaching that are often ignored when addressing matters of quality teaching. The various distinctions described above permit us to isolate and focus attention on what it is reasonable to expect of a teacher and the extent to which it is possible to hold a teacher responsible and accountable for success with learners. That is, we can distinguish *good teaching* from *successful teaching*, and separate good teaching from *learning* in order to examine what it is that a teacher can do to foster or assist in the student's learning. In effect, we are "bracketing" student willingness and effort, social surround, and opportunity, removing them from further consideration, so that we might look carefully at the fourth factor, teaching.

### **Elements of Good Teaching**

We turn now to a consideration of the elements of good teaching. That is, to those activities of teaching that lead to a judgment that this or that teaching is meritorious or excellent in some form. This particular inquiry has two purposes. The first is to examine teaching in such a way that it becomes apparent how we might proceed to improve or advance the practice of teachers, as well as to appraise their practice. The second purpose is to buttress the argument against any presumption of a simple and direct causal relationship between the activities of teaching and successful learning. As an entrée to this exploration consider the following thought experiment.

## A Thought Experiment

Imagine a school classroom with two large one-way glass panels, one on each side of the classroom. You are seated behind one of the glass panels, along with several colleagues who are considered experts in the appraisal of classroom teaching. You join them in observing an eighth grade world history lesson, on the topic of the Roman conquest. On the opposite wall, behind the other one-way glass, an operator sits in an elaborate control room, where she controls all the students, who are actually robots programmed with the capacity for speech, facial gestures, and arm and hand movement. While they look just like typical eighth grade children, these robots have no neural or cognitive capacity of their own. They cannot learn anything, in any usual sense of learn. Neither you nor any of your fellow experts know that the students are robots.

The teacher is a fellow human being, fully certified, including National Board Certification, with 15 years of middle school experience. Like you, she does not know her students are superb replicas of 13 and 14 year old humans. Her lesson on the Roman conquest lasts for 47 minutes, during which the operator in the control room has the robots smiling, frowning, raising hands with questions, offering answers to questions the teacher asks, and even one case of disciplining one of the “students” for launching a paper wad using a fat rubber band. The operator does this by having different robots make pre-programmed comments or ask previously programmed questions. The operator chooses from a vast repertoire of available gestures, speech acts, and bodily movements, while computers manage the activities of other students who are not being specifically managed by the operator.

At the conclusion of the lesson, you are breathless. What a performance! Your colleagues murmur assent. If they were holding scorecards, they would hold high their 9.9s and 10s. Indeed, if this had been videotaped, it would certainly qualify this teacher for a Disney Teacher of the Year Award. The subject matter was beautifully wrought, pitched right at the capacities of these students, as indicated by their enthusiasm and their responses to the teacher's superbly framed questions. You leave the room renewed, unaware that after the last of your colleagues departs, the operator turns off all the robots, who are now in exactly the same state as before the lesson. There are no brain cells to be altered, no synapses to fire. No learning could take place, and no learning did.

The next day you and your fellow panel of expert pedagogues are informed of the truth, that the students were really robots. What have you to say now about the quality of the teacher's performance? Does it occur to you that the teacher's instruction the day before is now less remarkable, and less deserving of praise? If you and your colleagues had indeed given all 10s for the teacher's performance, would you now wish to withdraw these high marks? These questions are intended to prompt consideration of our sense of what makes up good teaching.

There seems little doubt that the judgments rendered by you and your colleagues are likely to be affected by the robot responses selected by the operator. Suppose the operator had the robots respond differently, appearing to be bored, asking impertinent questions, and generally indicating a desire to be anywhere but in that classroom. You and your colleagues are likely to base part of your assessment of the teacher on how the students react to the teacher, providing higher marks to the teacher

if the students are fully engaged with her, and lower marks if the students appear to be running strongly against her. We take this circumstance to indicate that our judgments of the worth or merit of teaching are *learner-sensitive*, but not *learning-dependent*.

#### Learner-sensitive pedagogy vs. learning-dependent pedagogy

That is, our general, everyday view of what makes teaching good rests, to some extent, on how students react to what the teacher does. We are aware that certain kinds of behaviors and actions by students are indicative of their substantive engagement in what the teacher is doing, and when we observe these behaviors we note that the students are “with” the teacher; they are engaged, motivated, following, excited, connected, and the many other words we have for describing the ways students participate in lessons. We do not, however, generally wait to assess what the students have learned to decide whether good teaching has occurred (as the thought experiment makes clear). We do not generally believe that the learner must learn what is taught in order for the teacher to be well and properly engaged in his or her craft.

Still, the issue of learning nags, does it not? Recall an early section of this paper wherein we asked how long a salesperson could go without selling any cars before people stopped saying that he “sells cars” for a living, or how long a teacher could go without students actually learning before we stopped calling what they are doing “teaching children.” This concern is the basis for introducing the distinction between learner-sensitive pedagogy and learning-dependent pedagogy. Good teaching is learner-sensitive, while successful teaching is learning-dependent.

This distinction between learner-sensitive and learning-dependent permits the incorporation of considerations of the learner into conceptions of good teaching. As a result, the constituents of good teaching attend to how students respond to teaching practices, and whether or not these responses are productive of learning. To see how the learner is taken into consideration, we turn directly to the elements of good teaching.

### Three Elements of Good Teaching

We have, to this point, separated the occurrence of learning from that of teaching, arguing that teaching, by itself, does not produce learning. We also noted that not all learning is worthy of our approval and support; we seek learning that is useful, productive, and uplifting, not base, evil, or harmful. Nor is just any kind of teaching worthy of our support; we seek teaching methods that are rational and moral, not offensive and mean-spirited. These considerations prompted us to conclude that judgments of quality in teaching are grounded in various conceptions of methods employed to convey content of particular kinds. This conclusion must now be expanded to show just what methods are associated with quality teaching.

We group these methods into three categories of practice, what we are here calling elements of good teaching. Two are derived from the work of Thomas Green (1971), and the third is of our own construction (although not at all unique to us, as will be apparent in a moment). The two from Green are the logical and the psychological acts of teaching.<sup>4</sup> The logical acts include such activities as defining, demonstrating, explaining, correcting, and interpreting. The psychological acts encompass such things



as motivating, encouraging, rewarding, punishing, planning and evaluating. To these two task categories we can add a third, the moral acts of teaching, wherein the teacher both exhibits and fosters such moral traits as honesty, courage, tolerance, compassion, respect, and fairness.<sup>5</sup>

Each of these categories of activities has standards of adequacy, indicating whether they are performed poorly or expertly. The basis for these standards is very revealing about the nature of quality in teaching. The logical acts are generally appraised by standards internal to them. There is, for example, an extensive literature in the philosophy of science on the nature of explanation, especially on the criteria for a good explanation (among the criteria often proposed are completeness, coherence, and truthfulness). The psychological acts, in contrast, are generally appraised relative to the persons comprising the relationship. For example, whether an activity by the teacher is encouragement or not depends on whether the person the teacher sought to encourage was indeed encouraged. The moral acts are more akin to the logical acts, in that their standards of appraisal tend to be internal. Consider honesty as an example; what it means to be honest is generated more by analysis and argument than by the perceptions of those with whom one is being honest.

There are a number of teaching activities that are compounds of these three elements. Consider the act of evaluating a student's progress. There are internal standards for good evaluation (logical criteria). There are also considerations of whether an evaluation is just or compassionate (moral criteria). Finally, there are considerations of whether an evaluation will be accepted by the person evaluated, whether it will be of value to the person as feedback for improvement (psychological

criteria). Lesson planning is another complex domain, where the teacher seeks to render a body of knowledge with fidelity to the discipline from which it is taken (logical criteria), while adapting and representing this knowledge so that it can be accessed and analyzed by minds that are not yet acquainted with it (psychological criteria). Moral criteria often enter into this deliberation, as when a teacher decides to exercise the courage required to introduce the controversies that rage over some material.

A quite robust conception of teaching can be constructed with these three elements: logical, psychological, and moral. Indeed, a substantive and powerful conception of good teaching can be formulated using these categories. Good teaching occurs when each of these activities meets or exceeds the standards of adequacy that attach to each category of activity. Recall that these standards are sensitive to both internal and external criteria, to criteria that pertain just to the phenomenon itself (internal) as well as criteria that pertain to how the phenomenon is received or responded to (external). As such, how the students respond to the activities of teaching is very much a part of quality teaching, but whether or not the students actually learn the material taught is not. To repeat ourselves, perhaps to excess, good teaching is learner-sensitive while successful teaching is learning-dependent.

It is this mix of internal and external criteria for the logical, psychological, and moral activities of teaching that permits the expert observers in the thought experiment described above to feel comfortable judging the merit of teaching without having firm evidence of whether or not the students learned. Indeed evidence of actual learning typically does not figure into the determination of worth or goodness of teaching. The reasoning of the observer proceeds something like the following: I observe that the

logical, psychological, and moral activities of teaching are being carried out in a manner highly responsive to the standards of adequacy for each category; I further observe that nearly all the students are consistently responding to the teacher in a manner that signals their interest, engagement, and understanding; I also observe a high level of personal comfort and task orientation in this classroom; as a result I conclude that this teacher is easily meeting and very likely exceeding accepted standards for good teaching and that if the students are not in fact learning the material being taught, there is something else at work here aside from the goodness of the teaching.

#### Possibilities for Deception and Failure

Separating actual learning from teaching practices in the manner just described carries a measure of risk. Students can fool the teacher, acting as if they are fully engaged while maintaining a very superficial interest, or indeed even no interest at all. Without checking for actual learning, we will not know whether the apparent student responses are indicative of learning. There is also another possibility, that the students are genuinely engaged and responsive, but that they are learning something other than what the teacher intended (as can happen with what has come to be known as “the hidden curriculum” of the school) or that they are not learning the content very well (or at all) despite the surface appearance that they are fully engaged.

If these circumstances were common occurrences rather than unusual possibilities, the view of good teaching advanced here would face considerable threat.

However when we carefully judge that the standards for the three critical elements of good teaching are being met or exceeded, instances of deception and failure are quite rare. Experienced teachers and astute observers frequently detect deception, even if they occasionally do miss it. Moreover, student responses to teaching activities are so tightly grounded in conceptions of learning that if failure were a frequent result, the “approved list” of appropriate learner responses would no doubt be quickly revised.

It is perhaps here more than at any other point in this paper that a reader might in exasperation ask, “Why do the authors not just give up and default to learning as the condition for good teaching? It would be so much more simple if they did so?” Yes, it would be far more simple. But it would, for reasons we hope we have made clear, be an error. No conceptual or empirical analysis known to us supports such a position. Moreover, collapsing notions of teaching and learning into one another in such a manner yields frightening consequences, not the least of which is that the caretakers of schooling (primarily public officials, but also parents, churches, and businesses) are relieved of attending to learner willingness and effort, social surround, and opportunity—a relief that then permits the caretakers to place the full burden for student learning upon the shoulders of the teachers. In so doing, the caretakers’ burdens are greatly relieved, for it is far less costly to address issues of teaching training and development than to address the other conditions for successful learning.

The more justified course, in our view, is to acknowledge the complexity of the teaching-learning relationship, analyze its characteristics carefully and authentically, and build a robust conception of these characteristics that permit constructive advancements in our understanding and wise policies for enhancing the proficiency and

effectiveness of teachers and students. The conceptual part of such an effort has engaged us since the start of this paper. It alone is not sufficient to reveal what we know about good and successful–quality–teaching. There is also a body of scientific theory and empirical research that illuminates notions of quality teaching. It is to this work that we now turn.

## **II. Theoretical and Empirical Analysis of Quality Teaching**

From the late 1960's, research on teaching has become a strong and useful part of educational research. This research has been conducted within very different theoretical programs that embody varying conceptions of the roles of the teacher and students, good teaching, the valued outcomes of teaching, the nature of teacher change, and the methodology for conducting research. The research conducted in each program is designed to define and describe the nature of teaching as well as indicate what constitutes quality teaching. However, because of the different ways of viewing teaching, the task and achievement conceptions of teaching and the relationships between them vary considerably across these approaches. Three such programs are described below in terms of successful teaching (student effort, surround, opportunity, and good teaching), good teaching (logical, psychological and moral acts), and their inter-relationships.<sup>6</sup> Organizing and examining the three programs in this way provides

an opportunity to test the efficacy of the preceding conceptual analysis of the nature of teaching and judgments of its quality.

### **Teaching As Transmission--Process-Product Research**

The process-product approach to research on teaching reached its height in the U.S. during the mid 1970's. The purpose was to identify effective generic teaching behaviors that could then be used for teacher education and evaluation. Developed during a more positivist, behaviorist era in educational research, this linear model suggests that an effective teacher uses certain instructional behaviors to transmit knowledge and skills to students. The identification of these behaviors engaged researchers in the process of categorizing a sample of teachers as effective or less effective on the basis of their students' scores on standardized tests. These teachers were then observed using an instrument with primarily low-inference behavioral measures<sup>7</sup>. The behaviors of the less effective teachers were then compared, statistically, with those of the effective teachers (for a thorough summary of this research, see Brophy & Good, 1986). This led to the identification of such instructional constructs as direct instruction, time on task, and Academic Learning Time (Fisher, et al., 1980).

In this conception, the teacher holds knowledge and transmits this knowledge and skills to students. The student receives the knowledge that the teacher provides, hopefully being able to reproduce it in the same form sometime later. An important element of this approach is an instructional sequence in which the material is presented

to students, who are then provided with practice in using the new knowledge or skills. Classroom organization and management are also essential to engaging students in the material.

*Successful Teaching.* Student achievement was used as a means of identifying the more or less effective teachers within a sample. While the research interest focused on the nature of good teaching, successful teaching was the initial identifier. Considerable effort went into developing methods of examining gains in achievement scores, and controlling for incoming scores. There was also extensive discussion of whether to define effective teaching based on class mean gains, or individual gains (Burstein, 1980). *Student effort* and willingness to learn was considered, in part, the teachers' responsibility through establishing a classroom environment that would provide incentives to motivate students to learn. Eventually, *surround* was considered important in this model, but was considered, narrowly, as the classroom context factors of grade level, subject matter, and nature of student population. The importance of *opportunity to learn* was established in this research as student time on task became an outcome almost as critical to the program as student achievement.

*Good Teaching:* While student achievement was used as a means of identifying the more and less effective teachers within a sample, it was the identification of effective teaching behaviors that became the foundation of conceptions of good teaching. Thus, good teaching could be observed in the enactment of the direct instructional model of teaching (Rosenshine, 1979).

Most of the critical constructs that were examined were *psychological elements*. These involved teacher actions that motivated students to stay on task and manage their behavior, and that evaluated progress. These also included such constructs as the emotional climate of the classroom (Soar and Soar, 1979). When this program was used in specific subject matter areas, some *logical elements* also came into play. For example, Good and Notion (1979) conducted process-product studies within mathematics instruction, and identified elements of demonstration and practice as being effective teaching behaviors. *Moral elements* were not a consideration in this program.

*Relationship between Successful Teaching and Good Teaching:* The process-product program is learning-dependent in the sense that effective teachers were identified on the basis of their students' achievement. Thus, it brings together the achievement and task senses of teaching. The initial identification of effective teachers with their students' achievement was used to describe good teaching through effective classroom behaviors. It is important to point out, however, that it was never assumed that student achievement scores could be used to determine whether an individual teacher is effective. This approach to identification was meant to be used solely as a statistical probability endeavor with a large sample of teachers and students. It would not be valid for use with one teacher.

However, a construct did emerge that was meant to bridge the task and achievement senses of teaching, and this was called student engagement. This learner-sensitive construct focused on the student, and was designed as a measure



that was strongly affected by good teaching, and had a strong probability of leading to student achievement and thereby successful teaching.

Lest we think that this type of research has been completely replaced with a newer form, Floden (in press) has made a strong argument that much of the process/product approach to classroom research on teaching is still with us. He calls it the “effects of teaching” model that involves the search for causally-relevant connections between teaching and student achievement. He suggests that this model is operating today, even within the constructivist frame (see below). Thus, as we move to the more contemporary approaches to thinking about teaching and conducting research, it is best to realize the legacy of this approach.

### **Teaching as Cognition: Cognitive Science**

As educational research joined the cognitive revolution in the 1970's, the view of teaching and instruction began to change. With an initial focus on learning, instructional activities focused on teaching students strategies (Weinstein & Mayer, 1986) such as scaffolding student learning and other activities that acknowledged the cognitive processes involved in building knowledge and skills (Palincsar & Brown, 1984). In 1974, a Research on Teaching planning conference funded by the National Institute of Education divided the field into 10 areas. One of those was a panel on Teaching as Information Processing (National Institute of Education, 1975) chaired by Lee Shulman. This panel proposed the application of cognitive psychology to the study of classrooms and teaching. The initial work in this area focused on teacher planning, interactive

decision-making and judgments (Borko and Niles, 1987; Clark and Peterson, 1986; Shavelson and Stern, 1981). It suggested that teachers make many decisions in the course of one day and that these decisions are similar to those employed by executives (Berliner, 1983). This research also produced information on planning that suggested that experienced teachers do not use the Tyler model of teacher planning that was often taught in preservice teacher education (Yinger, 1980). The Tyler model suggests a linear process of planning that begins with behavioral objectives, moves to determining alternative approaches to fulfilling the objectives, and culminates in selecting among them (Tyler, 1950).

This research led to a view of teachers as similar to highly paid executives who make many decisions based on a multitude of variables (Berliner, 1983). It suggests that teachers operate automatically within well-established routines and make decisions at the point when something unacceptable occurs during the routines. They first observe a cue, then decide whether a cue is within tolerance and whether immediate action is necessary; if action is deemed necessary, they determine what action is appropriate and whether to store the information regarding this particular decision. These steps all precede a deliberate and unplanned change in routine.

*Successful Teaching* There is very little emphasis in this approach on successful teaching. The focus was on the teacher as a thinking professional and how to represent these cognitive processes. It was assumed that good teaching leads to student learning. Context could vary, as could the nature of the student population in a given teacher's classroom from year to year. Part of the responsibility of the teacher,

however, is to adjust his or her teaching to meet the needs and backgrounds that the students bring with them to class.

*Good Teaching*: Good teaching in this approach is portrayed in the notion of “expertise”. The expert teacher employs cognitive strategies and approaches quite different from the novice. In fact, Berliner (1994) posits five stages in the development of expertise, a progression that leads to excellence. Reaching these stages involves a combination of acquisition of knowledge about classrooms, strategies, experiential cases; the development of cognitive skills related to recognition of underlying meaning in classroom cues; a sense of personal agency; and eventually, an intuitive sensing of appropriate responses, in non-analytic and non-deliberative ways that leads to a fluid performance. Berliner points out while experience is a necessary condition in developing expertise, it is not sufficient. Many highly experienced teachers do not reach the fifth or highest level.

The classroom envisioned in this approach was still relatively teacher-centered, where teachers are responsible for teaching students strategies for learning content and developing skills. The *psychological* elements of teaching play a strong role in good teaching. For example, knowledge about students and the use of this knowledge in instruction is an important element of this approach to teaching. This requires that teachers keep track of individual student progress, and listen and observe carefully during instruction, and ask questions that reveal this knowledge.

The *logical* elements became more prominent in this program’s conception of good teaching. It was at this point that the teaching of subject matter became

prominent. In 1974, Lee Shulman (1974) proposed that we could move ahead in research on teaching only if we focused on the practice of teaching within specific domains. He suggested that subjects themselves are different and therefore require different acts of teaching. The field began to develop research on teaching programs within the specific subject matter areas such as reading, mathematics and science. The concept of good teaching then enveloped the cognitive ability to transform subject matter for students through pedagogical content knowledge (Shulman, 1987). This required a teacher with strong foundational knowledge in the subject matter to be taught, a notion that began to enter the conception of the expert teacher.

The *moral* elements were less emphasized in the initial work, although they began to play a part later on. There were two sources for the moral work. One was the consideration of the moral dimensions of teaching (Goodlad, Soder & Sirotnik, 1990; Tom, 1984), and one the view of the ethic of caring as played out in teaching (Noddings, 1984, 1992) The sense of caring did slip into the discussions of excellence in teaching every once in a while. For example, Berliner (1992) suggested that the expert teachers in his sample have the following sense of obligation toward their students: "A responsible teacher owes students the opportunity to obtain the knowledge and skill needed to succeed in life, and an effective teacher owes students civility and consideration" (p. 246).

*The Relationship between Successful Teaching and Good Teaching:* In all of this work, there was an assumption that expertise (a form of good teaching) would lead to student learning. Many of the teachers who were studied as experts were selected on

the basis of their students' learning (Carter, et al., 1988), although this was not a critical feature of the research program as it was in the process-product work.

### **Teaching as Facilitation: Constructivist Teaching**

Constructivism is a descriptive theory of learning that suggests that students develop meaning as their prior knowledge interacts with new or different knowledge they encounter in the classroom from such sources as the teacher, textbooks, and peers. Most constructivists would agree that the transmission approach described above promotes neither the interaction between prior knowledge and new knowledge nor the conversations that are necessary for internalizing knowledge and developing deep understanding. The new knowledge acquired from traditional teaching may not be well integrated with other knowledge held by the student. Thus, knowledge gained from traditional schooling is often brought forth for school-like activities such as exams, and ignored at other times. The goal of constructivist teaching is deep understanding of the subject on the part of the student (Cohen, McLaughlin & Talbert, 1993).

The view of instruction in this conception suggests a student-centered teacher who arranges the classroom around tasks that bring students into contact with knowledge, ideas and skills. The tasks are designed to permit the students to bring forth their knowledge of the phenomenon being studied, to question certain assumptions they may hold, and adjust their beliefs and/or develop new understandings. An important element of the teacher's role is to realize that individual students may approach a topic in quite unique ways, to learn how individual students

understand the topic, and work with the students in adding to or reconstructing their understandings. This view of constructivist teaching includes a way of thinking, a set of core beliefs on the part of the teacher, as well as a set of actions relative to these beliefs.

*Successful Teaching:* There is a strong sense of what students should be doing in classrooms and learning about subject matter. Individual students should be surfacing their background knowledge and beliefs, questioning them, adding new knowledge and restructuring their understanding of the phenomena under study. This process should yield students who continue to question their assumptions and who seek to broaden and deepen their understanding of their experiential world. Students themselves have a strong role to play in this form of teaching. They are actively engaged in the construction of meaning, working with peers in the social construction of meaning (Cobb, 1986). The teacher provides some elements of the *opportunity to learn*, the materials, etc., but the students themselves must be willing and eager to pursue activities that lead to understanding. The larger social surround has not yet been examined in depth in this program of research, although some scholars (Delpit 1988; Lee 1999) have raised concerns about the appropriateness of this approach to teaching certain populations of students.

*Good Teaching:* The sense of meritorious teaching in the constructivist research program is dramatically different from the views implicit in the process-product and cognitive programs. At this time, most of the research focuses on descriptions of the constructivist teacher (see, for example, the various chapters in Wood, Nelson &

Warfield, In Press), rather than on good or effective constructivist teaching. Excellence in teaching means being constructivist. This view requires that a teacher *think* in a constructivist manner, hold *beliefs* aligned with constructivist philosophy, and *act* in ways consistent with such beliefs and thinking. It is not possible to be a constructivist teacher unless all of this occur (see, for example, Ball, 1990 in mathematics teaching; Richardson, 1990 in teaching reading). Thus, we have not come across any research that describes “effective” and “less effective” constructivist teaching. Although there are many case studies that describe exemplary constructivist teaching, these are not contrasted with non-exemplary cases. Instead, they are often compared with traditional teachers (Wilson & Wineburg, 1993).

The *logical and psychological elements* of teaching are fairly well developed in the constructivist program. There is considerable emphasis on the logical elements, as the study of teaching within the content areas has been of primary concern in constructivist studies. There is a strong belief, leading from the late 1970's and the work at the Center for Research on Teaching at Michigan State University, that research on generic teaching does not lead us very far (see Leinhardt, In Press). Thus, there are constructivist teaching literatures in many separate fields such as reading (Barr ,In Press), writing (Freedman, 1994), history (Wilson & Wineburg, 19 93); mathematics (Cobb, Wood, Yackel & McNeal, 1992); and science (Mitchell, 1992).

*Moral elements* in teaching receive considerable attention in this literature. In a constructivist classroom, students and teachers, together, co-construct meaning and understanding. This requires that explicit attention be paid to the social relationships in

the classroom. From initial work on constructivism and teaching, a strong respect for the learner was expressed. The notion of “giving students reason” became an important stance in constructivist teaching. We first heard this term from Jean Bamberger and Eleanor Duckworth in the late 1970's as they explained the need to assume that student answers, while they may seem “incorrect”, usually make sense within the set of assumptions being employed by the students. The teacher is to assume that the student is being reasonable, and to determine what those assumptions are (Bamberger, Duckworth & Lampert, 1981). Close listening to students, and careful feedback in dialogue is an essential teaching element, as is working with students to create a civil atmosphere as they respond to each other and contribute to the conversation. As described by Ball & Wilson (1996), the moral is an essential dimension of almost all that the teacher does in the classroom.

*Relationship Between Successful Teaching and Good Teaching:* The constructivist program is very clear about the obligation for a good teacher to be learner-sensitive. An essential element of good teaching is the teacher's understanding and assessment of individual student construction of meaning. This approach requires student agency as well. That is, the student becomes responsible for his or her learning and that of the fellow students. But this responsibility becomes accepted by the student, in part, because of the environment that the teacher builds in the classroom. Thus, good teaching in this program includes not only the traditional acts or behaviors of teaching (logical, psychological, moral) as investigated in the process-product work, but also asks teachers to establish an environment that allows students to develop willingness to and responsibility for learning.



However, successful teaching has not been pursued extensively in this research program. Of interest is the depth of understanding gained by an individual student; and it is assumed this may look quite different from student to student. There is an assumption that students in constructivist classrooms will do well on standardized tests; but such conceptions of outcomes are not a part of the research designs that describe constructivist classrooms. Thus, while the concept of quality teaching in this program is heavily learner-sensitive, it is not particularly learning-dependent.

### **Recapitulation**

We described these three research programs in ways that make evident their consideration of quality teaching. We point out how they vary in attending to characteristics of good teaching and successful teaching, and how they also vary in attention to the critical elements of good teaching. The cognitive program, for example, gives extensive consideration to the logical and less to the moral; the constructivist program attends more to the psychological and the moral, but does not ignore the logical; the process-product program is profoundly psychological, with far less attention to the logical and almost no consideration of the moral. The three programs also differ in whether they respond primarily to the learner (learner-sensitive) or to the outcomes of learning (learning-dependent). Process-product research, for example, is highly learning-dependent, while constructivist research is highly learner-sensitive.

Our review makes clear that the different research programs have, as one might expect, different “takes” on what counts as good or successful teaching. Scholars who

have devoted lifetimes of study to teaching in schools differ on what is critical to the “doing” of teaching and on what one looks at to assess whether it is being done well or poorly. Do these differences imply that we are prevented from gaining a uniform, definitive grasp on the nature of teaching and the criteria for its quality?

Not at all. So long as we are clear and careful about what we are engaged in when making assertions about what teaching is and how it is appraised, we can tolerate—perhaps even celebrate—diversity in conception and evaluation. No matter which research program one studies, there are considerations, in some form, of the logical, psychological, and moral elements of teaching. No matter which program, there are considerations of the learner as person and social entity, on the one hand, and of learning as the outcome of the teacher-learner relationship, on the other. The vital insight is that when making a judgment of quality, one is always engaged in an interpretation—in a selection of one set of factors or indices over another, in attention to some dimensions of the phenomenon over other possible dimensions, in desiring and valuing some features of the task or the achievement more than other features.

Given the interpretive character of the appraisal of quality, what implications follow for policy? A consideration of this question takes us to the third and last section of this paper.

### **III. Making Comparative Appraisals of Quality Teaching**

The main point of this section is to inquire into just what is being assessed when it is claimed that one is assessing the quality of teaching. We pursue this point by

returning to the distinction drawn between teaching and learning, and recalling the four conditions for learning: learner willingness and effort, supportive social surround, opportunity to teach and learn, and good teaching practices. Many paragraphs back it was noted that teaching is both responsive to and enabled by the first three conditions. Let us follow that line of thought a bit longer.

A good teacher would find it exceedingly difficult to be a successful teacher without the first three conditions in place. Hence a good teacher (one whose practices meet or exceed standards of excellence for the logical, psychological, and moral elements of teaching) is unlikely to be judged a quality teacher absent the right conditions, *even though the practices employed by that teacher are meritorious on their own terms.*<sup>8</sup> We believe that what follows from this view is that quality teaching must be assessed multi-dimensionally, along four axes, if you will, each representing one of the conditions of learning. A judgment about the quality of teaching must consist of all four of the conditions for learning.

Hold on a moment. Consider again that last statement. If the elements of good teaching can be described and analyzed independent of learning, how can we justify the assertion that judgments of quality must be set in the context of all four conditions for learning? The assertion is not based solely on the fact that we defined quality teaching as teaching that is both good and successful. There is more than definitional sleight-of-hand taking place here. It is also that the appropriate practices, those serving as evidence of good teaching, may not be “actionable” in deficient contexts. That is, it may not always be possible to act proficiently on the elements of good teaching in cases where learner effort, surround, and opportunity are weak or highly

deficient. There are, as any teacher of more than a few years will inform you, interactions between the context for teaching and the practices of the teacher. One aspect of these interactions is that a person may be a good teacher in one context and a mediocre one in different context with virtually no variation in basic pedagogical form from one context to the other.

There is a flip side to this last contention: Good teaching is not only enabled by the conditions for learning, it is also responsive to them. The good teacher “adjusts” the elements of teaching on the basis of what is at hand in the way of students, surround, and resources. Indeed the research programs previously described can be viewed as efforts to guide and direct teachers in how to modify practice based on the nature of students, parents, school resources, and so forth. The cognitive and constructivist programs are particularly sensitive to the nature of the student, and the constructivist program is also sensitive to the nature of the larger social surround. The quality of teaching, how good and how successful it is, will depend—sometimes to a small and other times to a considerable extent—on how well the teacher adapts his or her instruction to the context at hand.

This responsiveness does not, in our view, extend to expectations of heroism on the part of the teacher. We caution against presuming that “really good teachers” ought be able to overcome all obstacles and impediments, adjusting their practice as if such adjustments could somehow compensate for ill-prepared and unready students, or for impoverished facilities and an absence of resources, or a social surround that devalues school and what might be acquired there. While heroes are always much to be admired, it would be poor policy in any social institution, whether the military, criminal

justice, or education, to predicate one's conceptions of quality and the means for appraising it on the heroes that occasionally present themselves.

Good teaching, then, while constituted by elements that cohere in the person of the teacher, is enabled by nurturing conditions and is also responsive to these same conditions. Good teaching may be thought of as symbiotic with types of learners, nature of the surround, and opportunities to teach and learn. As such, its appraisal could be undertaken in two different ways. The first is an appraisal independent of learning outcomes, wherein one examines the activities of the teacher to determine how well they conform to standards of practice in the three elements of teaching (in the manner of the thought experiment described earlier). The assessment in this case is sensitive to the learners taught, but not dependent on learning taking place. An assessment of this type requires a more developed understanding of the logical and moral elements of teaching than is currently possessed, although the research programs cited above have made some progress on many aspects of the three elements (but, not surprisingly, the psychological element is the most well developed).

The second approach to the appraisal of teaching attends to teaching that is both good and successful, and calls for a much broader effort than is the case for good teaching. Inasmuch as successful teaching is learning-dependent, it is necessary to know whether learning actually occurred, and to what level of competence or proficiency. It is also necessary to know something about the state of the learners, the character of the social surround, and the availability and extent of opportunity.

This multiple-factors approach to quality teaching has the advantage of offering a useful way to undertake cross-national comparisons of teaching, were that believed to

be useful. By establishing some scales along which one might fix such factors as readiness, surround and opportunity, it is possible use learning as one of the criteria for teaching. That is, if readiness, surround, and opportunity are all highly positive, and learning does not take place, the nature of the teaching is then subject to the most suspicion. In cases where readiness, surround, and opportunity score low, it becomes difficult, perhaps even erroneous, to hold the actions of the teacher accountable for the learning (as in law, there may be an element of contributory negligence on the part of the teacher, even though primary fault may lie with the larger social system and its support of the institution of school). International comparisons that take these factors into account could, we believe, have the result of indicating that good teaching is taking place even where the learning results are poor. It could also show that poor teaching is occurring where the learning results are quite good (comparatively speaking).

There is, finally, a useful policy implication in this framework for the analysis of quality teaching. It is the possibility that teaching could be made better by attending more to the other conditions (learner, surround, opportunity) and less to teachers themselves. We are not recommending this course (although it has a measure of appeal for us), but only suggesting that it is a possible course of action, and in some instances, might be a preferred course. It indicates that there are policy alternatives for improving teaching, that attending specifically to the practices of classroom teachers is not the sole approach to obtaining quality teaching.

Any teacher who has taught in two or more schools will have much to say about the interaction between teaching and its context. There are perhaps far more occasions than we realize where a significant improvement in teaching could be

realized by altering the contextual variables for that teaching. Indeed, from a policy perspective, there may be limits to just how good we can make teaching, given the vast numbers of persons involved, the nature of the social systems they occupy, and how we select, train, and compensate a nation's teachers. It may be that if further increments in learning are to be realized, we must turn to other factors affecting the equation, such as surround and opportunity.<sup>9</sup> Perhaps finding means of assessing these two factors will reveal more to aid in the improvement of learning than is revealed by assessing the activities of teachers.

We end this paper in a place different from where we began, for we have given definition and specificity to the notion of quality, *contra* the *Tao Te Ching* and Pirsig's interpretation of it in *Zen and the Art of Motorcycle Maintenance*. In so doing, we are defying an ancient and honorable code. Yet that code has not stopped others from asserting that they know quality teaching when they see it, they know how to determine whether it occurring or not, and they know this across schools, districts, states, and nations. Many such claims lack not only a good understanding of teaching, but also a humility for the challenge of appraising anything so complex as the nature and consequences of human relationships, particularly between adults and children in the otherwise unworldly setting of the schools of the early 21<sup>st</sup> century. Our hope is that by defying the *Tao* we will foster a measure of humility about the complexity of the task, while making a little better any well-intentioned efforts to judge the work of teachers. Even so, it is well to remember Pirsig's conception of quality: "People differ about Quality, not because Quality is different, but because people are different in terms of

experience.” In the context of international or cross-national comparisons of the quality of teaching, these words ring with much authority.

### References

Ball, D. (1990). Reflections and deflections of policy: The case of Carol Turner. *Educational Evaluation and Policy Analysis, 12*, 241-245.

Ball, D., & Wilson, S. (1996). Integrity in teaching: Recognizing the fusion of the moral and intellectual. *American Educational Research Journal, 33*(1), 155-192.

Bamberger, J., Duckworth, E., & Lampert, M. (1981). *Final report: An experiment in teacher development*. Cambridge, Mass: Mass. Institute of Technology.

Barr, R. (In Press). Research on the teaching of reading. In V. Richardson (Ed.) *Handbook of research on teaching* (Fourth Ed.). Washington, DC: American Educational Research Association.

Berliner, D. (1983). The executive functions of teaching. *Instructor, 93*, 29-39.

Berliner, D. (1992). The nature of expertise in teaching. In F. Oser, A. Dick, & J-L Patry (Eds.). *Effective and responsible teaching: The new synthesis*. (Pp. 227-248). San Francisco: Josey-Bass.

Berliner, D. (1994). Expertise: The wonder of exemplary performances. In J. N. Mangiere & C. C. Block (Eds.), *Creating powerful thinking in teachers and students: Diverse perspectives* (pp. 161-186).



Berliner, D., & Biddle, B. (1995). *The manufactured crisis*. New York: Addison-Wesley.

Borko, H., & Niles, J. (1987). Planning. In V. Richardson-Koehler (Ed.). *Educators handbook: A research perspective* (pp. 167-187). New York: Longman..

Brophy, J., & Good, T. (1986). Teacher behavior and student achievement. In M. C. Wittrock (Ed.), *Handbook of research on teaching* [3rd edition] (pp. 328-375). New York: Macmillan.

Burstein, L. (1980). Analyzing multilevel educational data: The choice of an analytical model rather than a unit of analysis. In E. Baker, E. Quellmalz (Eds.). *Design, analysis, and policy in testing and evaluation* (pp. 81-94). Beverly Hills: Sage Publications.

Carter, K., Cushing, K., Sabers, D., Stein, P., & Berliner, D. (1988). Expert-novice differences in perceiving and processing visual classroom information. *Journal of Teacher Education*, 39, 25-31.

Clark, C. & Peterson, P. (1986). Teachers' thought processes. In M.C. Wittrock (Ed.). *Handbook of research on teaching* [3<sup>rd</sup> ed., pp. 255-296]. New York: Macmillan.

Cobb, P. (1986). Making mathematics: Children's learning and the constructivist tradition. *Teachers College Record*, 56, 301-306.

Cobb, P., Wood, T., Yackel, E., & McNeal, B. (1992). Characteristics of classroom mathematics traditions: An interactional analysis. *American Educational Research Journal*, 29(3), 573-604.

Cohen, D., McLaughlin, M., & Talbert, J. (Eds.). (1993). *Teaching for understanding: Challenges for policy and practice*. San Francisco: Josey-Bass.

Delpit, L. (1988). The silenced dialogue: Power and pedagogy in educating other peoples' children. *Harvard Educational Review*, 56(4), 379-385.

Eisner, E. W. (1976). Educational connoisseurship and educational criticism: Their forms and functions in educational evaluation. *Journal of Aesthetic Education*, Bicentennial issue, 10(3-4), 135-150.

Eisner, E. W. (1977). On the uses of educational connoisseurship and criticism for evaluating classroom life. *Teachers College Record*, 78, 345-358.

Fenstermacher, G. D (1986). Philosophy of research on teaching: Three aspects. In M. C. Wittrock, Ed., *Handbook of research on teaching* (3<sup>rd</sup> ed., pp. 37-49). New York: Macmillan.

Fisher, C., Beliner, D., Filby, N., Marliave, R., Cahen, L., & Dishaw, M. (1980). Teaching behaviors, academic learning time, and student achievement: An overview. In C. Denham & A. Lieberman (Eds.), *Time to learn*. Washington, DC: National Institute of Education.

Floden, R. (In Press). Research on Effects of Teaching: A Continuing Model for Research on Teaching. In V. Richardson (Ed.), *Handbook of research on teaching* [Fourth edition]. Washington, DC: American Educational Research Association.

Freedman, S. W. (1994). *Exchanging writing, exchanging cultures*. Cambridge: Harvard University Press.

Good, T., & Notion, D. (1979). The Missouri mathematics effectiveness project: An experimental study of fourth-grade classrooms. *Journal of Educational Psychology, 71*, 355-362.

Goodlad, J., Soder, R., & Sirotnik, K. (Eds.). (1990). *The moral dimensions of teaching*. San Francisco: Jossey-Bass.

Green, T. F. (1971). *The activities of teaching*. New York: McGraw-Hill.

Lee, O. (1999). Science knowledge, world views, and information sources in social and cultural contexts: Making sense after a natural disaster. *American Educational Research Journal, 36*(2), 187-220.

Leinhardt, G. (In Press). Instructional explanations: A commonplace for teaching and location of contrast. In V. Richardson (Ed.), *Handbook of research on teaching* [Fourth Edition]. Washington, DC: American Educational Research Association.

Mitchell, I.J. (1992). The class level. In J.R. Baird & J.R. Northfield (Eds). *Learning from the PEEL experience*. Melbourn: Monash University.

National Institute of Education (1975). *Teaching as clinical information processing* [Report of Panel 6, National Conference on Studies in Teaching]. Washington, DC: Author.

Noddings, N. (1984). *Caring*. Berkley, CA: Berkeley University Press.

Noddings, N. (1992). *The challenge to care in schools: An alternative approach to education*. New York: Teachers College Press.

Palincsar, A., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition & Instruction, 1*, 117-175.

Richardson, V. (1990). Significant and worthwhile change in teaching practice. *Educational Researcher, 19*(7), 10-18.

Rosenshine, B. (1979). Content, time, and direct instruction. In P. Peterson and H. Walberg (Eds.), *Research on teaching: Concepts, findings and implications*. Berkeley, CA: McCutcheon.

Ryle, G. (1949). *The concept of mind*. New York: Barnes & Noble.

Shavelson, R.J. & Stern, P. (1981). Research on teachers' pedagogical thoughts, judgments, decisions, and behavior. *Review of Educational Research, 51*, 455-498.

Shuell, T. (1996). Teaching and learning in a classroom context. In D. Berliner and R. Calfee (Eds.). *Handbook of educational psychology*. New York: Simon & Schuster Macmillan.

Shulman, L. S. (1974). The psychology of school subjects: A premature obituary? *Journal of Research in Science Teaching, 11*(4), 319-339.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1-22.

Soar, R.S., & Soar, R.M. (1979). Emotional climate and management. In P. Peterson, & H.J. Walberg (Eds.). *Research on teaching: Concepts, findings, and implications*. (Pp. 97-119). Berkeley, CA: McCutcheon.

Tom, A. (1984). *Teaching as a moral craft*. New York: Longman

Tyler, R.W. (1950). *Basic principles of curriculum and instruction*. Chicago: University of Chicago Press.

Wilson, S., & Wineburg, S. (1993) Wrinkles in time and place: Using performance assessments to understand the knowledge of history teachers. *American Educational Research Journal*, 30, 729-769.

Yinger, R. (1980). A study of teacher planning. *Elementary School Journal*, 80. 107-127.

Weinstein, C., & Mayer, R.F. (1986). The teaching of learning strategies. In M. C. Wittrock (Ed.). *Handbook of research on teaching* [3<sup>rd</sup> ed., pp. 315-327]. New York: MacMillan.

Wood, T., Nelson, B.S., & Warfield, J. (Eds.) (In Press. *Beyond classical pedagogy: Teaching elementary school mathematics*. New Jersey: Erlbaum.

## Endnotes

1. On speaking of "cultivated intuition," one is reminded of Elliot Eisner's notion of connoisseurship. A quarter century ago Eisner proposed that we use highly developed aesthetic standards to gain a better understanding of the nature of teaching and as a means of appraising its quality. See Eisner, 1976, 1977.
2. Regarding the notion of context, consider that a teacher of under-nourished, experience-deprived youngsters might continue to be thought of as teaching even with few learning achievements. On the other hand, a teacher who appears to be getting nothing across to well-cared-for students with extensive and appropriate background knowledge might have to relinquish much sooner the description that he is engaged in teaching.
3. Like so many words in the language, 'quality' is both ambiguous and vague. Its ambiguity stems from the distinction between quality in the sense of the properties of an object, and quality in the sense of an appraisal of an object. For example, we might say of the element gold that it

has the following qualities, meaning thereby to enumerate its properties, such as its atomic structure, color, weight, malleability, and so forth. Or we might say that this gold is of the very highest quality, thereby indicating that it has properties of a certain kind, such properties being of high value to those who seek it. The vagueness of 'quality' stems from lack of crisp boundaries for asserting when something is of low, medium, or high quality, such that we are often uncertain about the point at which something becomes of quality, in the sense of being valued or not.

4. Green referred to the psychological acts as the "strategic acts" of teaching. Inasmuch as they are decidedly psychological in character, we prefer the symmetry of logical and psychological. It is probable that Green avoided "psychological" because implies a more technical, scientific quality than he intended for this category of teacher activity.
5. In addition to the logical, strategic, and moral acts of teaching, one might also inquire of the teacher's mastery of the subject matter being taught, as well as the quality of the relationship that the teacher establishes with the students. For purposes of this essay, the mastery of content is presumed to be included in the logical acts, wherein the teacher's explanations, demonstrations, interpretations, etc., reflect the depth of mastery that teacher has for the subject matter. The quality of the relationship between teacher and student is presumed to be included within the psychological and moral acts, wherein the teacher's efforts to motivate, reward, and encourage, as well as be fair, caring, and honest reflect the quality of the relationship established with the students.
6. There are a number of different descriptions of programs. For example, Shuell (1996) describes three: Behaviorist-derived, Cognitive and Social. He describes the latter two as Constructivist-derived. However, in research on teaching, the initial cognitive work was still quite behavioral. Therefore, it is treated as a category separate from constructivist teaching. The third category in this paper contains both the individual and social approaches to constructivism.
7. Low inferences measures are those that are easily observed, and do not require judgement as to effect or meaning. An example is: "Teacher asks a question." A high inference measure requires more judgment or inference. E.g., "Teacher asks a difficult question."
8. The exception, of course, is the heroic teacher; the Jaime Escalante's of the profession. Beneath a fair amount of contemporary U.S. educational policy is a presumption that all our teachers ought to be heroic, seemingly of Homeric proportions. Maintaining this presumption is a way of pressing the teacher to accept the full burden for the student's learning without addressing shortfalls in the other conditions for learning. Consider a comparable policy stance for the armed services, where training and resources were severely curtailed while it was argued that the American soldier would certainly compensate for these shortfalls because he or she was so exceptionally brave and committed. It would be sad policy for the military to assume that its resource and training base could be predicated on the view that every soldier will win a Medal of Honor.
9. This conclusion, we believe, is quite consistent with the approach and recommendations made by David Berliner and Bruce Biddle (1995) in *The Manufactured Crisis*.