

## THE DEVELOPMENT OF PRACTICAL THEORIES OF TEACHING

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The work of teaching is a much more complex professional task than its critics realize. Although teaching has characteristics found in other professions—for example, complexity, uncertainty, instability, and value-conflict<sup>1</sup>—teaching often is approached as if it were production-line work. Some seem to think that if decision rules and ways to carry out the tasks of teaching can be decided in some central office and be implemented by passive, unthinking teachers, then uniform results can be produced across whole school districts. Teachers, and readers of this journal, know that is nonsense. But even so, educators do not seem to be very clear about the nature of professional knowledge and its role in teaching. In this article we hope to provoke dialogue about these matters by suggesting a way to think about practical knowledge in teaching, how it comes into existence in usable form, and how its quality and use might be enhanced.

### THE NATURE OF TEACHING PRACTICE

Teaching is a complex task that involves assembling a set of specific practices, activities, and resources (such as materials, a designated allocation of time, teachers' skills, personalities, and styles) around or in terms of one or several educational purposes. To be successful teachers must organize and arrange these multiple factors in ways so that they are effective in cultivating the learning of a particular group of students—not some abstract student population but a real classroom or school-sized group of persons with individual personalities, backgrounds, and other particularities. The knowledge useful for teachers in carrying out this task is practical information organized in the form of a repertoire of practices, strategies, and ideas that are effective for those teachers in that particular setting.

Teaching is practical work carried out in a socially constructed, complex, and institutionalized world of schooling. That world shapes action and gives

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<sup>1</sup>Donald Schon, *The Reflective Practitioner. How Professionals Think in Action* (New York: Basic Books, 1983), p. 17.

context to its meaning. Educational practices are the media of professional action in that world, and they involve more than simply behavior. Professional practices are manifest in behavior, of course, but they entail thoughts, interpretations, choices, values, and commitments as well. As Carr and Kemmis put it,

A practice is the organised expression in action of a commitment; it depends for its success on responding to the practical exigencies of the situation in which it is enacted.<sup>2</sup>

Unavoidably, teaching is active, intentional, value-laden work. It is demanding, physically, emotionally, and mentally: many matters vie (often simultaneously) for teachers' attention, decision making, and action-taking. It also is intentional in that it involves acting in certain ways in order to produce or evoke desired consequences or to create particular conditions. And, of course, many different kinds of educational consequences might be sought through teaching action.

While it is possible to classify teaching practices in many different ways, three particular types are worth distinguishing for our purposes: teaching practices, structuring practices, and organizational policies and operating practices. These three kinds of practices interact, but they differ in terms of how they are enacted and the nature of their influence on students' experiencing.

*Teaching practices* are the activities or actions teachers undertake during most of their working time. Practices of this kind (e.g., leading a discussion about a book read by a small reading group, illustrating the use of a protractor, testing students' use of commas, or demonstrating the concepts of perimeter and volume) are relatively more fluid, interactive, and spontaneous than the other two forms of teaching practices.

*Structuring practices* provide structures and create conditions in which teaching-learning processes operate and set a foundation for implementing teaching practices. For example, when a teacher decides to individualize reading by having students select novels to read, and by arranging for individual discussions about those novels, that action sets a structure within which students will engage in their assigned activities, and within which the teacher will enact his or her teaching practice of interacting with individual students about the novels they are reading. By choosing this particular structuring practice, the teacher has established a pattern for activity that will endure for some period of time and that entails an associated set of additional actions like keeping a record of who is reading what, a schedule for individual discussions, and so forth. If a teacher does not develop the necessary implementation procedures, the plan is likely to go awry. Other examples of teacher governed structuring practices include establishing seating arrangements and sequencing activities through the day or week.

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<sup>2</sup>Wilfred Carr and Stephen Kemmis, *Becoming Critical: Knowing Through Action Research* (Victoria, Australia: Deakin University Press, 1983), p. 111.

Many structuring practices, like the preceding examples, are implemented at the classroom level and are the responsibility of the classroom teacher. But others are decided, and may be enacted, on a schoolwide or districtwide level. Many basic decisions about curriculum practices (curriculum plan, scope, sequence, content, objectives or aims, etc.) are of this type, as are the many other structuring decisions that affect teaching practices, such as the school timetable and calendar.

We do not intend here to imply any judgment about the desirability of different forms of school decision making. Rather we simply want to point out that educational practices differ in kind. Structuring practices influence the learning and experiencing of both teachers and learners, and they may be the responsibility of different actors in different school organizations. Teaching practices are involved in running a class, once the class as an educational setting has been created.

Structuring practices are those that affect or establish an educational setting for some period of time—a school term or week or day, or for the duration of a lesson or unit. Once enacted, these practices are difficult to modify until the end of that period (say, for example, until the end of the semester) because they involve some time commitment. Examples include textbook selection or a long-term learning activity like completing a library research paper. Practices of this sort clearly affect teaching-learning processes, and they may be enacted by individual teachers in their classrooms or by others for a group of classrooms. They count as an important type of educational practices.

*Organizational policies and operating practices* are yet a third form of educational procedures, which blurs into and overlaps the foregoing types, especially the structuring type. Scheduling subjects and events (like assemblies or when the lunch count is due), assigning teachers to subjects, or assigning children to particular classrooms are some examples. So are the practices used for selecting students for school placement or for special programs for the “gifted and talented.” Other examples include testing or screening activities, or choice of a particular form of school organization, or a grading system.

These kinds of policies and operating procedures are educational practices that often have concrete and direct influence on teaching-learning processes in a school or classroom. Yet they may be based on considerations that strictly speaking are not educational, like balancing workloads among teachers or lowering costs. These procedures certainly affect the *teaching* practices of teachers, and they have characteristics like *structuring* practices: they are set for a period of time (though they can be changed subsequently), and they establish or create some structural properties of the setting for teaching (e.g., precisely which students will be in this classroom this term).

Practices of all three types are educational if they are intended to or if they actually have consequences in the learning experiences of students. They are actions taken that are intentional, purposive, enacted with some end-in-

view. They also are inherently value-laden. They are (or should be) meaningful and justifiable because they lead to educationally desirable consequences, and whenever we wonder what is educationally desirable, we raise value issues. Both means and ends are entailed when one chooses teaching or educating practices because any chosen educational end involves or implies certain means and excludes others. Similarly, specific practices imply certain ends and exclude others.

In this sense, educational "ends" are constitutive of means as *educational* means. To say, for example, that "critical thinking" is a desirable educational end is to express a "procedural principle" governing the kind of "educational means" that are permissible. It is, in other words, to imply that rote-learning memorisation or passive instruction are inadequate as "educational means." But this is not the same as saying they are ineffective. More accurately, it is to say that they are unacceptable because they do not accord with the values implicit in this end.<sup>3</sup>

Although teachers may perceive structuring or policy and operating practices as exogenous to their own scope of responsibility and authority, implementation of any structuring practice (e.g., selecting certain curriculum objectives) at the very minimum limits the ends that might be sought through a teacher's operating practices. Thus it is clear that teaching action is always taken within a complex situation in which a set of factors—including other practices—is present. These factors work together to influence the consequences resulting when a particular action is taken. Teaching consequently occurs in contexts shaped by such powerful, interrelated factors as the teacher's personality and talents, other teachers' actions, the nature of learners, interpersonal relations, psychological factors and social norms, the building's layout, school policies, external factors, and others. Any of these factors may significantly influence the consequences of any particular action taken by a teacher.

Partly because such factors interact with teachers' actions or practices and thereby influence them, teaching actions have effects that cannot be entirely knowable in advance. That is, the particular effects of these factors on the consequences of a practice cannot be known in advance with accuracy. Furthermore, interaction effects may vary from situation to situation, and across settings, so that inferences drawn from earlier experience may not apply to this case. Teachers frequently are uncertain as to how to proceed. Their uncertainty is exacerbated by another feature of the teaching-learning process: the actual—as opposed to the intended—consequences of practices depend on how these particular students, at this moment, perceive and construe them. While a teacher may be acting in ways intended to encourage a student to enjoy and be successful in a lesson, some students may perceive that action as punitive or oppressive. Others may find it boring, or they may

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<sup>3</sup>Ibid., p. 78

think the content is beyond their reach. In such cases, the consequences will very likely differ from those intended by the teacher.

Teaching is professional work that involves taking action intentionally and skillfully, in a timely way, under conditions that are changeable and problematic. And, like some other professions, perhaps, teaching involves taking actions to structure the settings in which learning occurs as well as to enact other practices (*teaching practices*) in the context of those structures.

These problematic features of teaching are fundamental, and they cannot be ignored or circumvented. Yet practitioners often deal with them quite successfully. How can that be? How do teachers cope with the uncertain, conflicted, problematic world of the classroom and the school? They do so, we believe, by developing practical "theories" of teaching.

### THE NATURE OF PRACTICAL THEORIES OF TEACHING

Effective professional practice is skillful action undertaken within real-world conditions and constraints that produces desired consequences. This kind of skillful action is based on the professional's interpretation or "appreciation" of the particulars of the situations he or she faces. But inexperienced and untrained persons cannot do the same thing for two primary reasons: (1) they are not able to perceive and interpret the professionally significant features of the situation, and (2) they lack the knowledge that enables a practitioner to choose actions that are appropriate in these circumstances for producing desired consequences.

The pragmatic aim, to produce desired consequences, is inevitably a professional's intention. It is what he or she is hired for and (presumably) professionally skilled in accomplishing. But while professional aims in education are pragmatic, they cannot be value-free. On the contrary, educational decisions inherently include normative components and professional judgments about teaching effectiveness depending on normative considerations, although those judgments may be embedded in choices that might appear to be made on purely pragmatic grounds.

Practical knowledge is required to perform professional tasks, a kind of knowledge Argyris has termed "theories of action."<sup>4</sup> In education, that kind of knowledge is usually called professional knowledge to distinguish it from "educational theory," which some teachers presume has little relevance for professional work. But in important ways, the professional knowledge of expert teachers is theoretical knowledge, which is vital to success in teaching.

Practical theories of teaching are the conceptual structures and visions that provide teachers with reasons for acting as they do, and for choosing the teaching activities and curriculum materials they choose in order to be effective.

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<sup>4</sup>Chris Argyris, *Reasoning, Learning and Action. Individual and Organizational* (San Francisco: Jossey-Bass, Inc., 1982).

tive. They are the principles or propositions that undergird and guide teachers' appreciations, decisions, and actions.

The reason such theories are vital to success in teaching is that educational problems are practical problems.<sup>4</sup> They cannot be solved simply by discovering new knowledge or inventing some solution. To be effective, solutions must be put into action in ways that are fitting in the particular circumstances of a specific educational setting. As Carr and Kemmis put it,

[A]ll practical activities are guided by some theory. . . . For teachers could not even begin to "practice" without some knowledge of the situation in which they are operating and some idea of what it is that needs to be done. In this sense anybody engaged in the "practice" of educating must already possess some "theory" of education which structures his activities and guides his decisions.<sup>5</sup>

Practical theories of teaching often are consciously held, and teachers are able to explicate them. Sometimes, however, though teachers may not be conscious of the reasons for their actions, they still act. In such a situation, the actions themselves may be the only manifestation of their "theories-in-use," as Argyris terms them. While not all theories-in-use are unconscious guides for action, unrecognized by the person acting, some are, and Argyris has found that they often differ from "espoused theories."<sup>6</sup> He has found—as has Oberg in her work on teachers' "images"—that it is possible for practitioners to come to realize their unrecognized theories of action through reflecting on their practice.<sup>8</sup>

Teachers operate on the basis not of a single theory, but of many, some of which are known to them and some of which they may be unaware. But whether or not teachers are conscious of their reasons for action, all professional work is rational (according to Argyris), in the sense that it is intended to accomplish some purpose, to produce a desired consequence. Teachers may not be fully conscious of their reasoning, and they may well rely on accustomed routines without consciously thinking about them, but it is in the nature of their work that teachers are always trying to accomplish something when they act professionally. As Argyris' research discovered,

People rarely produce actions that do not make sense to themselves—they have intentions about what it is that they are trying to accomplish. The degree to which they are aware of their intentions varies, but so far we have found that their actions are

<sup>4</sup>William A. Reid, "Practical Reasoning and Curriculum Decisions," in *Thinking About Curriculum* (London: Routledge and Kegan Paul, 1978), pp. 41–69.

<sup>5</sup>Wilfred Carr and Stephen Kemmis, *Becoming Critical. Knowing Through Action Research* (Victoria, Australia: Deakin University Press, 1983), p. 110.

<sup>7</sup>Chris Argyris, *Reasoning, Learning and Action. Individual and Organizational* (San Francisco: Jossey-Bass, Inc., 1982).

<sup>8</sup>Antoinette Oberg, "Staff Development Through Individual Reflection on Practice" (paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April 1986).

intentionally rational. Their actions are explicitly or tacitly designed to achieve some intended consequences.<sup>9</sup>

Every teaching practice teachers use is employed rationally, in this sense, precisely because they are engaged in intentional, purposive action to create conditions in which learning will occur. Of course, some of their actions are ancillary to that general aim, serving to support it or make it possible (e.g., cleaning the tables in a kindergarten after making soup), and some are taken without thinking much about them. But if asked to explain why they did that, or why students are doing a certain activity, teachers usually can give their reasons.

These "reasons why teachers do what they do" are complex notions, which have not been widely studied empirically. It seems likely, however, that they include ideas teachers hold about what is important to achieve, concrete means for achieving those ends, and specific practices to be used in order to teach in a particular situation. All of these ideas might be incorporated into a single practical theory of teaching in the teacher's mind but more often, probably, theories are used together, in sets. It appears that teachers rarely conceive of their theories as systematic or rigorous propositions. Some may be simply tacit understandings. Teachers may not be very articulate about their reasons for doing what they do, but they trust them to work and prize them as the fruits of successful teaching experience. Practical theories of teaching are usually not written down or analyzed for logical or conceptual flaws, and only occasionally are they based on rigorous research. Indeed, a teacher may conceive them in terms that an outsider might view as quite superficial: "We copy spelling words three times each, because children learn their words that way."

While teachers may not regard practical theories of teaching as propositions or "claims-to-know," conceptually they amount to professional claims-to-know that in some ways parallel scientific theories: they designate what is taken to be important in a given situation, single out for attention certain features of "reality" and relationships among them, and denote those features with particular concepts. For example, the concept of "critical thinking" discussed earlier distinguishes a specific form of thinking. The reality addressed by a teacher concerned with critical thinking is a different reality than the one construed by a teacher concerned with memorizing spelling words.

Furthermore, the terms and conceptualizations teachers use to think about their teaching carry value-loadings. There is no value-free language for thinking about or conceiving "reality." This is inevitable in education for the reason that what one takes as educational is itself a value-based judgment.<sup>10</sup> It

<sup>9</sup>Chris Argyris, *Reasoning, Learning and Action. Individual and Organizational* (San Francisco: Jossey-Bass, Inc., 1982), p. 41.

<sup>10</sup>Richard S. Peters, "Education as Initiation," in *Philosophical Analysis and Education*, ed. Reginald D. Archambault (London: Routledge and Kegan Paul, 1965), pp. 87-111.

also is inevitable in teaching, as well as in hard science fields, for another reason, as philosophers of science have demonstrated: concepts and conceptualizations are inevitably "theory-laden," and for that reason the notion of value-free observation of reality is illusory.<sup>11</sup>

But practical theories of teaching are not scientific theories, at least not in the sense that such theories have been understood traditionally. Theories that count as "scientific" theories are expected generally to be conceptually precise, specifically explicated, and able to withstand rigorous logical tests. They also are expected to be subject to public disconfirmation. If these are necessary properties of "scientific" theories, then practical theories of teaching are not scientific.

Indeed, practical theories of teaching are more like the practical knowledge or "wisdom" used by practitioners in other professional fields. An example is the notion of "political wisdom" as the political scientist Sheldon Wolin described it. Consider this passage, which we have revised, substituting the notion "educational wisdom" for his concept of political wisdom:

What is [educational] wisdom? Put in this vague form, the question is unanswerable, but it may be reformulated so as to be fruitful. The antithesis between [educational] wisdom and [educational] science basically concerns two different forms of knowledge. The scientific form represents the search for rigorous formulations which are logically consistent and empirically testable. As a form it has the qualities of compactness, manipulability, and relative independence of context. [Educational] wisdom ... [is a] composite type of knowledge [that] presents a contrast with the scientific type. Its mode of activity is not so much the style of the search as of the reflection. It is mindful of logic, but more so of the incoherence and contradictoriness of experience. And for the same reason, it is distrustful of rigor. [Educational] life does not yield its significance to terse hypotheses but is elusive, and hence meaningful statements about it often have to be allusive and intimated. Context becomes supremely important, for actions and events occur in no other setting. Knowledge of this type tends, therefore, to be suggestive and illuminative rather than explicit and determinate.<sup>12</sup>

Practical theories of teaching are not—and cannot be—like scientific theories, "organized for the pursuit of knowledge," because the problematic and fluid nature of teaching-learning processes makes the discovery and confirmation of universally applicable, "law-like" or "nomothetic" generalizations through standard scientific procedures unlikely, if not impossible.<sup>13</sup> The fundamental reason is that teaching is always undertaken through concrete particular actions that operate within the context of a complex set of other indeterminate factors, which can, and often do, affect the consequences of the action.

<sup>11</sup>Richard J. Bernstein, *Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis* (Philadelphia: University of Pennsylvania Press, 1983), Part II.

<sup>12</sup>Sheldon Wolin, quoted in Richard J. Bernstein, *Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis* (Philadelphia: University of Pennsylvania Press, 1983), p. 45.

<sup>13</sup>See Yvonna Lincoln and Egon Guba, *Naturalistic Inquiry* (Beverly Hills: Sage Publications, 1985) for an extended argument on this idea.



## DEVELOPING PRACTICAL THEORIES OF TEACHING

How do teachers and administrators acquire "educational wisdom" or theories that have practical value in teaching? They say they learn how to teach through experience, which makes sense. However, they do not learn how to teach *well* simply through experience; rather it seems likely that they learn to teach through a process of practice-centered inquiry that helps them to discover effective teaching practices and to develop effective practical theories of teaching.

The intention to be effective in teaching, not to be incompetent, is more than simply a professional expectation implied by an employment contract; it is a positive, internalized psychological force pressing teachers. Teachers say they enter the profession because they want to have a positive influence on the lives of youth.<sup>14</sup> Yet, because of the nature of teaching, a teacher's sense of personal effectiveness is frequently at risk. "The implication is clear," Lortie concluded from his data, "teaching is inherently problematic and its psychic rewards are not automatic."<sup>15</sup>

An important reason is that teachers are constantly "on display" in their classrooms, exposing themselves as persons as they interact with students. Students frequently challenge and contest teachers' influence and their actions, and sometimes in ways that are not subtle. Further, teachers may not always be able to act precisely as they would prefer because the school's policy, or administrators' or parents' beliefs, or the school's climate may be at odds with what they would prefer to do. For these and other reasons, the personal competency and effectiveness of their teaching is challenged frequently and in many ways as they teach.

If Argyris is right, teachers (like other professionals) act *in order* to accomplish desired intentions or consequences. This is the root of teaching practice. Professional action inherently entails acting purposively and is intended to be "effective" in the sense that actions result in desired consequences. Teachers *intend* to be effective, seek to be competent, not to fail in ways that diminish their sense of self-efficacy. Moreover, as we have seen, choosing and enacting educational practices inevitably involves values. Thus, the practical theories that guide teachers entail their value choices and account for their views of what it takes to be effective.

Teachers probably develop their own individual notions of what is effective teaching over their whole careers by reflecting on what they know of the aims of teaching (a matter addressed substantively in many teacher education courses), through dialogue with, and observation of, other teachers, and by informally observing their students and students' products as they talk, write,

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<sup>14</sup>Dan Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975).

<sup>15</sup>*Ibid.*, p. 121.

play, speak, and engage in other activities throughout the day. Through activities like these, teachers judge their own work and develop insights into the nature of effective practice.

However, practices in teaching are enacted under certain specific contextual conditions that differ over time. Practices are generally enacted within a configuration of other practices, conditions, actions, and interactions that differ from one time to the next: that configuration, or a particular aspect of it, may influence the actual effects of the practice in question. Today's class may be affected by yesterday's snowstorm, a fight on the playground, or a host of other matters. Additionally, certain results of practices may be elusive or difficult to foretell. For these reasons, the effects of a practice are always problematic. These are facts that teachers tend to realize and that many researchers tend to ignore. And they call for an inquiring approach to the practice of teaching.

The reason is that the best way to cope with the problematic, complex, uncertain nature of practice is (1) to appreciate the situation in depth and select a practice tentatively, based on available understanding of what is educationally desirable in this situation, feasible, and likely to be effective in resulting in desired outcomes; (2) to try that practice in action and see its results; and (3) to revise the practice if necessary, correct it for flaws observed, and try again. This is the approach taken by experienced, inquiring teachers, and it is a foundation upon which improvement of teaching practice can be sought.

Exactly how teachers develop the theories that guide their teaching is far from clear. While they do acquire some professionally useful knowledge in preservice preparation, teachers apparently believe that their training was not sufficient to make them effective teachers.<sup>16</sup> For this reason, we probably can assume that many—perhaps most—of a teacher's theories of teaching are acquired through experience on the job. It seems likely, however, because teaching is a human enterprise, that useful information also is acquired at home, as a student oneself, with peers, and so forth. Indeed some theories of action that are used in teaching are probably acquired early in life and come to be deeply embedded in the teacher's cognitive and behavioral repertoires simply through use. This is one of the sources of tacit theories of teaching.

Other sources of practical theories are colleagues and the patterns or regularities of school life. "This is the way we do it here" and "Start grading hard, then ease up" are common examples of information given to many teachers as part of the socialization process when they join a school staff. Teachers seem to value and trust information provided by other teachers more than that proffered by either experts or research reports, and there is a sound reason for this: the issue teachers face is not whether a practice works

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<sup>16</sup>Dan Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975).

in general, but does it work for me here in this context? In any case, learning on the job seems to be the main source of teachers' practical knowledge.

Once they begin to practice, teachers draw on a wide variety of sources to acquire information that may contribute to their theories of teaching. feedback acquired while teaching, experience participating in committee work and staff meetings, other teachers, journal articles, working on master's degrees, inservice, and so forth. Some—maybe much—of the information acquired is forgotten, however, or for some reason not assimilated into teachers' theories of teaching. Some information acquired may be retained as a part of a teacher's espoused theories without being used. And surely, only a portion of the information acquired is actually integrated into teachers' theories of teaching. But if this is so, then how do teachers develop those theories? How do teachers learn what they need to know to be successful as teachers?

While we believe that teachers do learn how to teach effectively through experience, it probably is not quite that simple. *How* do they learn through experience? One important way is through some process of practice-centered inquiry. Such a process can enable teachers to discover practices that are personally effective, and to develop theories of teaching that are effective in terms of their beliefs and values. It also can help them to distinguish those theories from others that are not effective for them in the school setting in which they work. By comparing their practices to a vision of what they believe to be effective or ideal practice, and by trying out specific practices and weighing the consequences, teachers can develop practical theories that are personally trusted and valuable in their own teaching.

Effective theories of action, we suspect, are not acquired so much as they are *developed* by teachers. Teachers probably develop trusted theories of teaching as the residue of a series of small specific experiences that have the character of small studies or investigations. While few teachers have been trained explicitly to do this kind of inquiry, most teachers probably engage in it informally as an implicit facet of their work.

Initially in developing a practical theory, a teacher is confronted by new information of some sort—an instructional idea, a realization that a currently used program is boring and ineffective for two-thirds of a class, curriculum materials, students' test scores, an argument to add something to the curriculum, and so forth. The process can be illustrated as follows.

1. A teacher encounters a new idea (for example, an idea for a set of art lessons) and attends to the idea if it seems to be potentially valuable, important, or attractive.

2. The teacher senses that the idea might be valuable and "tests" it conceptually to consider whether it seems plausible and likely to be effective in terms of his or her existing theories of action. The teacher does this by comparing the new idea to previous experiences, to what he or she knows about students, school policies, parents' expectations, conditions in the school,

and other relevant, practical matters. The teacher envisions in a sort of mental exercise what such a lesson would be like if he or she taught it.

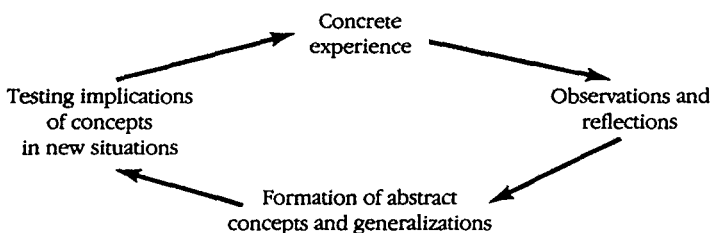
3 If the idea passes the conceptual test, the teacher tests it empirically, in experience in the classroom, and observes the consequences of the experiment.

4 The teacher reflects on the experience and its consequences, then interprets it based on his or her existing theories of effective action, and may revise, confirm, augment, or otherwise change those theories.

5 On the basis of his or her theories of action—as now augmented and perhaps revised by the interpretation of the experience with this small study—the teacher makes future decisions to use, modify, or not to use the idea as it was originally conceived or to search for an alternative if that action seems called for.

Most if not all teachers have experienced this kind of practical inquiry. It is a process teachers can—and, we believe, do—use to develop theories of teaching that they trust, based on their experiences in their practical settings. And it is a version of a normal, natural process used pragmatically by all of us—consciously or unconsciously—to learn through experience. Indeed, we do this when we cook, paint, ski, fish, do home repairs, and in other activities in our daily lives, not only in our teaching.

Kolb's work in cognitive theory provides us a generalized way to understand this process.<sup>17</sup> His theory of experiential learning emphasizes the dialectical nature of human transactions in experience and portrays learning in terms of a four-stage cycle.



Kolb explains this model by stating that

Immediate concrete experience is the basis for observation and reflection. An individual uses these observations to build an idea, generalization, or "theory" from which new implications for action can be deduced. These implications or hypotheses then serve as guides in acting to create new experiences.<sup>18</sup>

<sup>17</sup>D. A. Kolb, "Learning Styles and Disciplinary Differences," in *The Modern American College*, ed. Arthur Chickering (San Francisco: Jossey-Bass, 1981), pp. 232–235.

<sup>18</sup>*Ibid.*, p. 235

This represents quite well the process of practical inquiry described earlier. Encountering a new idea, teachers are likely to reflect upon it, compare it to what else they know, and make a judgment about whether it "makes sense" in terms of what they already know. If it does make sense, teachers are likely to test it in a new concrete experience—in the classroom—on the basis of their formation of abstract concepts and generalizations, and then to observe and reflect upon the meaning of that testing in concrete experience. Let us now return to a matter alluded to earlier, the relations of practical theories of teaching and scientific theories.

Although practical theories of teaching are *not* scientific theories, they have some of the characteristics of such theories:

1. They are *claims-to-know*—propositions or statements that are held to be true. In scientific work, a claim-to-know is considered to be true if it is warranted—substantiated for the purposes for which it is intended to be used—by both sound reasoning and the claim's consistency with relevant facts observed in the world of experience.

2. They are *empirical* claims-to-know. An empirical claim is a statement about the world of experience. Consequently, if such a claim is false, its falsity can be demonstrated by an appeal to the facts observed and known to exist in the world of experience.

Teaching theories may be conceived as empirical claims-to-know in that they indicate what happens or will happen as a result of a particular action. Of course, teachers do not ordinarily state their practical theories as formal propositions, not even privately to themselves. But if they are asked why they do something, the response generally is in the form of a claim-to-know that gives the teacher's "good reasons" for the practice used. One teacher, for example, when asked why the kindergarten children were cooking soup, replied that school cooking helps in four areas of learning: language—vocabulary development, math—measuring concepts (volume, height, temperatures); science—observation and description of phenomena (simmering, steam, boiling); and experiencing cooking and understanding about food and nutrition, new tastes, and knowledge.

Even in the case of tacit theories-in-use, they are enacted and therefore observable, at least in principle. Because theories of teaching incorporate ideas about what is or will be the consequence of the action, and since that consequence occurs in the world beyond the private personal experiences of the teacher who enacts those theories, the consequence is manifest, it is observable. In other words, theories can be tested. For this reason, theories of teaching have a third characteristic in common with scientific theories.

3. They are *falsifiable*. That is, empirical theories can be demonstrated to be false by showing that the empirical facts observed are not consistent with the facts that should be observable if the theory is true—if it is scientifically warranted.

"Falsificationism" is a term given to this epistemological position. Carnap elaborated this notion by saying that

If verification (of a scientific theory) is understood as a complete and definitive establishment of truth, then a universal sentence (e.g., a so-called law of physics or biology) can never be verified. . . . Even if each single instance of the law were supposed to be verifiable, the number of instances to which the law refers—e.g., the time-space points—is infinite and therefore can never be exhausted by our observations which are always finite in number. We cannot verify the law, but we can test it by testing its single instances. . . . If in the continued series of testing experiments no negative instance is found but the number of positive instances increases, then our confidence in the law will grow step by step. . . . We speak (therefore) of gradually increasing confirmation of the law.<sup>19</sup>

From this perspective, no scientific law can be fully verified, it can only be confirmed through a series of repeated, rigorous tests seeking to disconfirm the law's truthfulness.

This same logic applies to practical theories of teaching. They also are empirical claims-to-know, and they can be falsified by observing their consequences. If the consequences expected or sought are not there to be observed, then we may conclude that the theory was falsified. If they are there and if they are observed, then we may say the theory was confirmed. We can do so only if they were observed. But we cannot say that the theory was verified as a universal generalization—shown to be certainly true—in any case, because we have not observed, and cannot observe, all instances to which the theory refers.

The reasons why practical theories of teaching are not scientific theories, even though they have some similar characteristics relate to two further features which arise out of the nature of the practical work of teaching:

1 Theories of action are *particularistic*. Teachers are not concerned with whether their theories are true for all instances of a given kind, they care about whether their theories are effective and true here, with these children, in this situation. While teachers may have an abstract intellectual interest in "laws" of teaching and learning, their primary practical interest and responsibility rests in teaching these students, here and now.

2 They are *individualistic*. Such theories are developed personally by each individual teacher. This is necessary because a teacher needs to have quickly accessible, workable, and trustworthy knowledge that is useful in concrete terms in a specific teaching situation. While a teacher's practical theories often are shared by others, they are used as a part of an individual teacher's unique, personal teaching style, and they develop out of that teacher's personal interpretations of many small "studies." Since the interpretations are individualistic, the theories will be. Moreover, such theories may not be

<sup>19</sup>Rudolf Carnap, "Testability and Meaning," in *Readings in the Philosophy of Science*, ed. Herbert Feigl and May Brodbeck (New York: Appleton-Century-Crofts, 1953), p. 48.

considered reflectively and critically. Thus practical theories tend to be private and individualistic. This is not the case for scientific theories. they must be presented and tested in public space.

Hence, practical theories of teaching differ from what are usually thought of as scientific theories: they are warranted by experience in only one site, within the configuration of factors present there, and that experience has—in most cases—been interpreted only privately by the teacher and thus is based on that practitioner's individual history, understandings, interpretations, and personal style.

Let's return to the question of why certain matters become part of a teacher's set of practical theories of teaching and others do not. One way teachers develop their practical theories probably is by using an unsystematic and unrealized form of falsificationism. Teachers are unlikely even to try out a new teaching idea or practice unless it survives the conceptual test of comparing it to what else they know through a process of reflective thought. Further, if it is judged to be sound or feasible and desirable through reflection, it probably will be used in a tentative, exploratory manner in practice. The teacher watches and listens, wondering with part of his or her mind whether that new practice is effective. But a theory of teaching will likely not be trusted or used on a regular basis unless it is *not falsified* in the teacher's experience with it. That is, if there is no evidence it is not working, the teacher likely will continue to use it.

No matter how well warranted a practice may be according to the findings of educational research, it is unlikely to be accepted, fully trusted, and internalized by a teacher unless it survives a personal test for effectiveness. Hence, some ideas do not receive consideration because they are judged inappropriate on conceptual grounds. Other ideas may be discarded because they are not understood, for example, a teacher cannot envision them in practice because they are too abstractly presented. Also, a teacher may try some that do not work. So ideas may not become instrumental in shaping a teacher's theories of teaching if the ideas are discarded as not worth trying, if the ideas are not understood, or because they do not stand up when tested empirically. Finally, because the context of practice changes, theories of effective action need to be continually reformulated, discarded, and developed.

An idea of practice, however, that does survive those tests is likely to be retained as a part of the teacher's theories of effective action until and unless it is falsified, that is, until evidence disconfirming its effectiveness comes to the teacher's attention. The reason is expressed in the aphorism, "If it ain't broke, don't fix it." And this makes good sense, too. The world of teaching practice is so multifaceted, busy, and demanding that sheer conservation of effort is required if a teacher is to proceed. Furthermore, testing a new practice in experience—particularly if it is done carefully—takes time and energy, which are scarce resources most teachers need to conserve. The consequence

is that a teacher's theories of effective teaching tend to be stable over time. A teacher is unlikely to reconsider or revise them unless he or she personally perceives some strong reason to do so.

In summary, we suggest that teachers naturally develop practical theories they deem effective based on their own empirical observations and reflections within their own practice settings. This development can be explained in terms of Kolb's four-stage experiential learning model. Teachers' theories of effective teaching are similar to scientific theories in that they are claims-to-know, are empirical, and are falsifiable. Such theories, however, are also particularistic and individualistic; while they may be found to be common to several teachers, they usually are not made explicit, not subjected to public disconfirmation. And further, they are not—indeed by one teacher they cannot be—tested out in other like instances. They may be warranted *here*, but their generalizability rarely is known.

#### PRACTICE-CENTERED INQUIRY

Most teachers inquire into their own practice, at least sporadically, and sometimes fairly continuously, through a process of inquiry that is familiar but unremarked. When teachers get surprised by a set of exams, or an unexpected student response, they ask themselves why it happened, and what factors might have contributed to it. Thinking about the matter and, perhaps, seeking out more information about it, they decide what to do in the future to improve or to correct that situation. And through this means they build up a store of practical knowledge that includes rules of thumb, expectations, and practical theories of teaching. However, because they are limited in the time and energy that they can devote to this kind of reflective inquiry, and because they generally develop theories or patterns that will serve "well enough," teachers usually reserve conscious reflection and inquiry to moments of crisis.

This process—which we term practice-centered inquiry (PCI) because it has no recognized name—is widely used by teachers as they ordinarily go about their work. It is so natural and so common, we suspect, that many teachers and supervisors do not think about using it consciously and systematically for the purpose of improving educational practice. Yet it can be a powerful tool not only for monitoring what is going on in a school or classroom but also for improving both teaching practices and structuring practices. The latter—particularly at the school level—tend to be established and maintained without reconsideration indefinitely, unless a crisis arises. But regular monitoring and reflecting on such practices could help a school staff build an ethos of cooperative, improvement-oriented deliberation, as well as improved practices.

Practice-centered inquiry is an approach and a set of tools that educators—teachers and administrators, individually or in groups—can use for that purpose. They can use it very informally in monitoring ongoing classroom



events and responding to them, or systematically to collect information about operating or structuring practices and analyze that information to help make sound judgments about those practices.

The PCI approach works this way. After planning a practice (guided by the relevant theories of teaching available to the teachers involved), teachers use it in the natural context of the class or school in which the effects of that practice will be manifested. They then observe those effects, interpreting and analyzing them in light of conditions present in the setting. Subsequently they reflect on the meaning of the information acquired in light of the educational aims and expectations of that setting, and in comparison with other alternative practices, in order to decide whether to modify, replace, or retain the practice under consideration.

The fundamental reasons why teachers can, and should, use PCI as a tool for improving their teaching are these:

1. Teachers have powerful motives to be effective in their classrooms, as we have seen, but they are not typically equipped with tools that they can use at their own initiative and in their own ways for that purpose.

2. Whether the practices teachers use are in fact effective—or continue to be effective over time—is uncertain and problematic. For that reason, teachers need to monitor the effects that result when they are used this time, with *this* particular group of students. Doing so can help teachers make timely corrections and modifications in their practices and, at the same time, acquire information that can help to explain and justify their practices. In this age of accountability, evidence supporting the effectiveness of teaching practices is increasingly valuable.

3. While teachers in charge of classrooms or schools must make judgments about the desirability and the effectiveness of practices they use in advance, they cannot know what the actual consequences are, or have an adequate basis on which to judge their effectiveness, until they have been used in this specific context. No matter that the practices have been found effective by other teachers, in other schools, or even in rigorous R&D studies, their effectiveness here cannot be known, without trying them out here. Teachers need trustworthy inquiry tools that will enable them to make those judgments. Outsiders (including administrators and evaluators who may have more training in inquiry methods than teachers) are not as well equipped to make those judgments because they lack close, fine-grained understanding of what is going on in the classroom, and they lack power to change those practices. Teachers actually doing the teaching have the advantage in both respects.

4. Teachers have not been trained, conventionally, in inquiry methods that are usable and helpful in classroom inquiry into teaching practices. But now they can be because methods of naturalistic-qualitative-action research are coming to be widely available. These methods are particularly apt for

classroom studies, and teachers can easily learn them because they are systematized, more refined versions of the practice-centered inquiry methods teachers use naturally.

Supervisors can help teachers increase the power of their practical inquiry in several ways. First, they can encourage and help teachers to approach their inquiry deliberately and systematically rather than casually.<sup>20</sup> Second, supervisors can promote systematic collection of information about the immediate and long-term effects of specific practices, emphasizing the importance of teachers' obtaining informative feedback about their teaching in concrete detail. Workshops in classroom feedback methods and methods for Action Research can be useful.<sup>21</sup> Third, they can promote critical reflection by teachers about their theories of teaching through periodic dialogue in discussion groups or self-reflective writing.<sup>22</sup>

In broader terms, however, perhaps the most important move educators could make as a profession would be to reverse the way we approach the problem of "theory into practice." Instead of asking how the *findings* of research could be made accessible and useful to practitioners, we could ask: how can practitioners apply the *tools* of research to inquire into the practical problems of teaching they face in their own work?

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<sup>20</sup>Sharon Feiman Nemser, "Learning to Teach" in *Handbook of Teaching and Policy*, ed. Lee S. Shulman and Gary Sykes (New York: Longman, 1983), pp. 150-170.

<sup>21</sup>Stephen Kemmis and Robin McTaggart, *The Action Research Planner* (Victoria, Australia: Deakin University Press, 1982).

<sup>22</sup>See for example, David Tripp, "Action Research and Professional Development" (a Discussion Paper for the Australian College of Education Project 1984-1985); Antoinette Oberg, "Developing Self-Reflective Knowledge of Professional Practice Through Journal Writing" (paper presented at the Annual Meeting of the Canadian Association for Curriculum Studies, June 1985).

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