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Challenges Confronting the Researcher/Teacher: Conflicts of Purpose and Conduct

E. DAVID WONG

An increasing number of university faculty appreciate that the role of classroom teacher offers a valuable research perspective (Richardson, 1994). However, striving to be both a researcher and a teacher presents unique and serious challenges. I refer to the Aristotelian distinction between the theoretical and practical "sciences" to characterize the nature of the conflicts I experienced as a researcher/teacher. I go on to describe how it became necessary to renegotiate traditional classroom values and expectations so that the activity of research might become a more productive part of the instructional experience. I suggest that similar kinds of tensions may be inherent to any responsible, inquiry-oriented teaching and that these challenges create opportunities to contemplate important issues about the nature of research, teaching, and curriculum.

The primary purpose of research is to learn through investigation. The researcher’s efforts are characterized by observation, analysis, and reflection. The primary purpose of teaching is to bring others to understand. In addition, the teacher strives to make something good happen, to facilitate a continuity of ideas and action, to maintain harmony in the classroom. Given that teaching and research hold different goals, does it follow that the subsequent action—the manner by which the goals are reached—should also be different? More importantly, might these actions not only differ in nature, but also conflict as well? Although teaching in a public school and conducting educational research are both certainly challenging in their own right, this article examines the ethical (what is the right thing to do?) and logistical (how do I do it?) tensions that may arise when trying to do both simultaneously.

What Is a Researcher/Teacher?
The definition of researcher/teacher is broad and diverse. Therefore, I shall first describe the specific nature of my work and how it relates and contrasts to other notions of researcher/teacher. Although both university faculty and classroom teachers can adopt the researcher/teacher role, my focus in this article is on university faculty who spend considerable lengths of time as regular classroom teachers. In addition, I was attempting to conduct what Richardson (1994) calls “formal research” aimed primarily to contribute to a knowledge base as opposed to “practical inquiry” aimed primarily at understanding and improving one’s own practice.

The researcher/teacher has typically used his or her unique perspective to describe various aspects of teaching such as the knowledge required, its challenges and dilemmas, or the experience of insight and growth (for other examples of the researcher/teacher in science, refer to the work of D. Eichenger, D. Hammer, or C. Anderson; in math, M. Lampert, D. Ball, or D. Chazan; in social studies: S. Wilson or K. Roth). By contrast, my goal as a researcher/teacher was to understand student learning better, rather than my own teaching. Specifically, my research attempted to understand the degree to which middle school students’ explanations of natural phenomena are “scientific” in substance and in development. I highlight these differences because I suspect that the issues I shall explore in this article become more salient in light of my efforts to understand student learning rather than issues of pedagogy.

Inquiry into student learning is typically the purview of educational psychology where the researcher’s role is frequently that of an outsider. Traditional investigations of students’ knowledge and reasoning might rely on either: (a) “laboratory” settings where students perform tasks outside of their class, or (b) in-class situations where the researcher observes students as they are taught by the regular teacher. From the “insider” role as the teacher, I was able to make the inquiry sensitive and responsive to subtle details or unanticipated events. Almost immediately, however, I was confronted with the challenge of being both a researcher and a teacher.

What follows is a short vignette based on my classroom experience as a regular science teacher in an inner-city middle school. After the anecdote, I apply the Aristotelian distinction between the theoretical and practical sciences to analyze the ethical and logistical elements of my conflict. Although some readers may find this distinction between research and teaching to be overdrawn or artificial, it gives form to and promotes analysis of some real issues of classroom-based research. I go on to describe how it became necessary for me to renegotiate traditional classroom norms, roles, values, and expectations for myself and for my students so that my research agenda became a more integral part of the instructional experience. I conclude by suggesting that similar kinds of tensions may be inherent to the complex work of any responsible, inquiry-oriented

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teacher. Although the challenges may be unavoidable, they create a unique opportunity to consider important issues about the nature of research, teaching, and curriculum.

A Case of Conflict

“I know! I know!” Toni exclaimed. I had just asked my middle-school class to explain why they thought the lit candle in the beaker went out when vinegar and baking soda were added. Toni spoke with excitement and pride as she shared her ideas about this puzzling phenomenon.

Unfortunately, when Toni finally finished her explanation, I had absolutely no idea what she had meant. I smiled weakly and looked her in the eyes. Toni was sitting there, in the front of the classroom, upright and proud. Not knowing quite what to say, I slowly lifted my gaze to the rest of the class. Sixteen pairs of eyes, in varying states of alertness, were aimed in my direction. They were silent and expectant. They were waiting for me, their teacher.

“Okaaaay, Toni,” I acknowledged hesitantly. Immediately, three or four students began to shout their own explanations about why the candle flame went out. Their hands were raised, of course.

“Wait, wait,” I said. “I want to hear more about what Toni has to say.” Her explanation had been so unusual. I sensed something interesting was close at hand. Recently, I had been doing quite a bit of thinking and writing about how students’ explanations for natural phenomenon were or were not scientific. Toni’s confused account presented a wonderful opportunity to understand this issue more fully and perhaps to inform future instruction.

“Toni, could you repeat your explanation again for me?” I thought that a second pass might enable me to understand enough to ask her more specific questions. I was being deliberately careful not to obscure her original ideas by putting my words to her explanation. If I wanted to understand and eventually write about students’ naive ways of explaining, I had to let Toni relate her view as much as she could on her own.

After Toni’s long recounting, I was able to ask a follow-up question. She sighed quietly. I reassured her that I knew that this was difficult, but to try her best.

Toni’s eyes quickly glanced backwards to the rest of the class. I noticed that other students were still trying to offer their own accounts, although there were now fewer than before. Johnny, in the back, began pounding out a rhythm with his palms and knuckles on the desk top.

I began to feel uneasy about continuing my line of questions with Toni. The rest of the class was clearly losing interest and I was running the risk of losing the focus of the lesson. However, this opportunity to understand Toni’s explanation of this phenomenon might never present itself again. We had just scratched the surface and we were making interesting progress.

“Toni,” I asked, “Can you say more about exactly how you thought the fizzing put the candle flame out?” As I asked this question, I was moving toward the center of the classroom with one hand raised. With the other hand, I put my finger to my lips. Three simultaneous nonverbal signals requesting the other students to listen.

Toni sighed again, this time in loud exasperation. “I already told you!”

Just as I had suspected! Toni was beginning to provide a wonderful illustration of how students often confuse description with explanation. She had described the vinegar and baking soda fizzing which, she explained, was the reason the flame went out. By scientific standards, the explanation was still missing from her account. This unexpected exchange clearly had the potential to reveal interesting differences between scientific and nonscientific criteria for what “counts” as a good explanation.

Excited, I tried to think of a way to carefully move Toni along. Standing prominently in the center of the room—my right hand raised, my left finger to my lips, my eyes comforting Toni—I attempted to phrase my next question.

A few moments passed. I couldn’t think of what to ask. I couldn’t concentrate. Frustrated and tense, I looked around the room. Jerry rocked back in his chair; Jerome was making fun of Marc’s haircut; Ted and Tanika had their heads on the desk. I could hear Sam and James, who had been eager to share their ideas, grumbling angrily about how I never called on them. Johnny, with a faraway look in his eyes, continued to pound an incessant rhythm on the desk.

Contrasting Research and Teaching: An Aristotelian Perspective

Some readers may suggest that I have defined the roles of researcher and teacher too narrowly. For example, I would agree that good research and good teaching are both characterized by inquiry and reflection. I maintain, however, that although the nature of research and teaching are similar, there are distinct differences in priorities. In brief, the primary goal of research is to understand; the primary goal of teaching is to help students learn.

The argument that research and teaching differ in important ways is not a new one. In his political treatise *Nicomachean Ethics*, Aristotle makes a distinction between theoretical and practical “sciences.” For Aristotle, any department of human activity—conduct, production, speculation—may be called a “science,” insofar as it is alive with true thinking. The two categories were distinguished by different modes of exercise, and different areas of experience addressed. In his analysis and commentary on The *Nicomachean Ethics*, H. H. Joachim (1951) contrasts Aristotle’s theoretical and practical sciences:

The [theoretical] “scientific man” . . . is entirely concerned with knowing or understanding. He plays the part of a spectator of what is—and is independently of him. He neither desires, nor is able, to alter the truth of things. His object is to conform his notions to the truth of things: not to bring them, the things, into harmony with his notions. . . . When the objects of his study are subject to change—when, for example, he is investigating natural phenomena—he tries to watch the process; not to modify it, except so far as experimental modification helps him to understand. (p. 2)

In these [practical] “sciences” man is concerned with the sphere of process or change . . . He is concerned only with the variable, with that which could be other than it is, and primarily so far as he is able to initiate and control its variations. The source of the change or process in the objects, so far as they come under practical and productive “sciences,” is not in them but in the man. Thus it is the will, the deliberate decision or purpose, of the agent which produces the action—which initiates that change outside the man called an act. The source of change lies in the “scientific man”—in the craftsman or the agent. (p. 3)
Distinctions between the theoretical and practical sciences can be usefully examined in terms of the goals, the nature of the activity, and the subject of interest (see Figure 1). The goal of theoretical sciences is to understand; the activity is careful observation and inquiry. In the practical sciences, by contrast, the goal and activity are one and the same: to "live well"—to conduct oneself as a good citizen—is both a means and an end in itself. It is interesting to note that Aristotle also distinguished a third "science"—the production sciences where the maker’s will, motives, and method of operation are of importance only insofar as they affect the character of the product. With craftsmen or artisans, for example, judgment is based on the products, not the process that produced them. Although only the theoretical and practical sciences will be examined in this discussion, the contrast between the practical and the productive sciences helps to illustrate the central role that conduct—the means to the end—occupies in the practical sciences.

It is important to emphasize that the central argument being presented is not that researchers are reflective and teachers are only concerned with action. Instead, responsible research and teaching are both fundamentally thoughtful activities. The thinking and reflection that characterizes teaching produces a decision to act, rather than a warranted conclusion supported by evidence (Schwab, 1969). The inquiry that characterizes good teaching is instrumental for better practice, rather than an end in itself. Also, the Aristotelian distinctions might best be construed as a Deweyan dialectic: positions established to promote discussion and thought. Because the forms of teaching and research are varied, identifying universal distinctions between them would be an unwarranted assertion.

Teaching as a Practical Science
Parallels can readily be drawn between the theoretical sciences and classroom research, and between the practical sciences and teaching. In a critique of current educational research practices, Carr and Kemmis (1986) highlight differences between teaching and research similar to those made by Aristotle:

<table>
<thead>
<tr>
<th>Theoretical Research</th>
<th>Practical Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary goal</strong></td>
<td>to know, to understand</td>
</tr>
<tr>
<td><strong>Primary activity</strong></td>
<td>observing carefully, reflecting, inquiring</td>
</tr>
<tr>
<td><strong>Primary outcome</strong></td>
<td>theory: timeless and universal; warranted conclusions</td>
</tr>
<tr>
<td><strong>Primary subject of interest</strong></td>
<td>the unalterable nature, the constant, the laws and features of nature</td>
</tr>
</tbody>
</table>

FIGURE 1. Contrasting theoretical and practical disciplines

Practice is particular and urgent; it is what teachers do in meeting the tasks and demands confronting them in their everyday work. Theory, in sharp contrast, is timeless and universal; it is something produced by researchers through the careful process of enquiry. (p. 2)

Alan Tom’s (1984) characterization of teaching as a “moral craft” reinforces the notion that teaching is, in essence, an effort to “do good” (for examples of other authors writing in the same vein, see Goodlad, Soder, & Sirotnik, 1990; Clark, 1991; Noddings, 1988; & Sockett, 1989). My own experiences working with other teachers also tend to support this image of teaching. Teachers often seem to resonate to discussions dealing with issues about “What to do?” In their evaluation of their own teaching, teachers often have a tendency to focus on conduct: that is, how students and teacher interacted during class. Similarly, students tend to remember and appreciate those teachers who act responsibly and with compassion and respect. The questions teachers ask and the means by which they evaluate their practice reveals a strong focus on conduct and action—the essence of a practical science.

Although research activities (particularly social science research) strive to treat participants fairly and humanely, moral action is not raison d’être as in the practical sciences. This is not to suggest that issues of conduct or value are of no relevance to the field of research. An unmistakable moral theme characterizes scientific and public debate about atomic energy, medical treatments, or animal research. The business of research is generating knowledge in an ethical, timely manner. In teaching, moral imperatives are more than a code of ethics that regulate the activity of instruction. To act morally—to treat the students with compassion, to provide them with experiences that are of value—is at the core of what teaching is. “To educate is to lead responsibly—to influence students’ knowledge, skills, and dispositions in a way that will serve them and their society well and to do so in a morally defensible way” (Clark, 1990, p. 252).

The Action Research Movement: The Teacher as Researcher
The philosophical underpinnings of certain forms of action research have a direct relationship with Aristotle’s attempt to contrast the distinctive features of research with “practical” activities such as teaching (Carr & Kemmis, 1986). Action research groups were formed in England as school teachers and university faculty alike were compelled by the need to identify research methods better suited in substance and form to the practice of teachers. Early forms of action research were typically efforts by small groups of individuals to apply the generalities of theory to the specifics of their particular site and practice (cf. Corey, 1953; Lewin, 1948; Wallace, 1987). The findings of scientific research were seen as useful and only in need of “fine tuning” by those who would apply them. Later, practitioner-based research was argued as crucial for the generation, not just the application, of instructional theory.

Some proponents of action research make the strong assertion that the epistemology, goals, and methods of traditional scientific research are in principle unsuited to understanding the practical activities such as teaching. Specifically, the practice of teaching cannot be usefully described by abstract principles derived from the social sci-
ences because the activity of teaching is so imbued with human intention and inextricably embedded in the specifics of each situation. It follows, then, that teaching cannot be understood fully from the perspective of an outsider. The inextricable relationship between action and understanding is central. Only by doing, by trying to teach another person, can the practice of teaching be understood (Atkin, 1989; Carr, 1983; Carr & Kemmis, 1986; Elliott, 1987, 1990). The action research movement and other related teacher-centered research projects have made efforts to eliminate the distinction between the researcher and the teacher. This change is most evident in how teachers assume the primary responsibility for identifying the research issues, collecting data, and analyzing and interpreting that data. University faculty or other outsiders to the school community typically adopt the role of facilitator, observer, or equal participant.

A Conflict of Purpose: To Observe or Change the Students?

Even though the teacher is the researcher and even though the definitions of research may have changed, it does not necessarily follow that teaching and research are identical activities. I think the Aristotelian distinction between the goals and activities of research (to understand by systematic observation) and teaching (to affect a change) still applies. In my case, I felt a distinct tension between trying to be systematic and thorough and trying to be responsive and compassionate.

Returning to the example: As a researcher, I was reluctant to assist Toni, for fear that I would alter the “phenomenon,” that is, her interesting ideas about the scientific phenomenon. As a researcher, I was greatly interested in students’ conceptions of the natural world and their ways of interpreting and explaining them. I felt that any assistance from me would adversely influence the expression of their tenuous understanding. On the other hand, as a teacher, I felt obligated to instruct, to change Toni’s notions or her way of thinking. She was obviously struggling and expecting my assistance. It was clear to both of us that her explanation was confused and inaccurate. My sense of responsibility as a teacher urged me to help her move beyond her initial understanding.

In this example, the exigencies of teaching created a tension with the practice of research. Other ordinary aspects of teaching such as class size, the bell schedule, and time obligations also make it increasingly difficult to maintain two basic requirements of research of any kind: careful design and systematic procedures. Some may argue that expecting students’ understanding to “stay still” long enough to be carefully “examined” may be naive, especially in the context of school where change in understanding through instruction is modus operandi. The solution, some would suggest, is to rework the focus or design of the research. The “phenomenon” being studied could have been redefined as the change in the students’ original understanding as a result of my intervention. Or, perhaps, the phenomenon could have been construed even more broadly to include my actions, thereby focusing on the interaction between me and my students. Or, I might have concentrated primarily on teaching during class and then later reflected back on class as a researcher. In all cases, the research would necessarily inform a different question or issue.

Alternative Strategies for Addressing My Challenge

These types of “constraints” forced me to make difficult choices. Whether these new questions are of more or less value than the original question becomes important. Because gaining an understanding of students’ conceptions without the influence of teacher instruction was, in fact, important to my research, I was faced with three options: one unsatisfactory, one unpleasant, and one difficult.

The first option was to do as suggested previously: take a more active instructional role by helping and correcting the student’s understanding. This intervention fulfills the traditional responsibilities of teaching, but compromises the original research design. Only sketchy inferences can be made about what the students’ conceptions might have been before the influence of instruction. In addition, moving to a new set of research questions would not necessarily eliminate the conflicts of conducting research and teaching. New conflicts would surely emerge.

The second option was to continue asking the student extended, probing questions. As described in the vignette at the beginning of this article, I sensed fairly early in my exchange with Toni that a “traditional” teacher would probably have intervened and helped at that point. Soon after I chose to continue “to observe” rather than “to teach,” I realized that whether I chose to act as a “traditional” teacher or not, I could not neglect the responsibilities of the teacher. The dilemma about how to act, therefore, represented more than a logistical conflict of purpose (to research or to teach). Because this choice occurred in the context of a classroom, moral issues of conduct (how to treat others humanely and responsibly) become centrally involved.

A Conflict of Conduct: When Research Seems Like the “Wrong” Thing to Do

Any viable option must begin with the assumption that most actions in classroom settings will have moral implications, whether these actions are primarily research or teaching in purpose. Before the specifics of the third option can be discussed, the nature of the moral imperatives underlying research and teaching will be examined. In the following sections, an apparent conflict between the moral dimensions of research and teaching exemplified in the vignette is elaborated. Then, the issue of how to address this conflict is discussed.

What were the moral dimensions of my particular classroom situation? As I attempted to draw more thoughts from Toni, she was clearly becoming uncomfortable with the situation. She seemed confused with my requests for her to explain again. She may have thought that she had just provided an explanation...why did I want her to explain again? Also, she may have been expecting me, as the teacher, to respond to her initial answer with some sort of evaluative response and then to move on to another student. She may have been surprised to find herself answering more questions—questions that were ambiguous, questions that she had not volunteered to answer. Her sideward glances to the rest of the class, her furrowed brow, her plaintive sighs all suggested that I was treating her in a way that was, somehow, not quite right.

Not only did this course of action seem to place Toni in an uncomfortable position, but by granting extended at-
tention to a single student, I sensed I was also being unfair to the rest of the class. Several other students had raised their hands in eager anticipation of their turn to answer the question. After they had been made to wait considerably longer than they were accustomed, they began to demonstrate their dissatisfaction. Some students who continued to have their hands raised sighed loudly; others explicitly complained about how it was unfair that I was not calling on them; and more than a few students gave up and disengaged from the lesson by turning away from the front of the class, talking to their friends, or putting their heads on the desk. 2

From a research perspective, my persistent questioning seemed like a methodologically sound approach. To gain a rich understanding of an individual’s knowledge typically requires a series of extended, probing questions. In the context of this classroom, however, my actions seemed unfair, inconsiderate, or irresponsible. My efforts to be thorough and systematic—to exercise “control” in a research sense—in learning about Toni’s explanation simultaneously led to a loss of “control” in teaching sense. My actions as a researcher compromised my role as a teacher.

The Third Choice: Renegotiate the Culture of the Classroom

Lampert (1985) has argued convincingly that good teaching is inherently fraught with these kinds of tensions. In these dilemmas, the teacher is typically confronted with a situation where all alternatives for action are equally unsatisfactory. According to Lampert, these dilemmas illustrate how teaching is more than the simple application of technical strategies to problem situations. Instead of “solving” these dilemmas, the teacher can only strive to manage or negotiate the tension and act with compassion and integrity.

How did I manage the tension resulting from my efforts to be both a researcher and a teacher? My extended questioning of Toni had clearly violated several established expectations concerning the interaction of teacher and students. First, teachers usually expect and get brief student responses to their questions. (Dillon, 1985; Wong, 1991). Second, teachers usually acknowledge students who wish to respond to the question. By the existing system of rules and values of my class, my actions were interpreted as unfair by the students. Several students complained explicitly that I was ignoring their requests to participate, whereas others tended to “disengage” as a form of passive resistance to my method of teaching.

The suggestion that my actions violated students’ expectations prompted me to reflect on the concept of “fairness.” Fairness implies a following of a standard of what is proper and is characterized by the expectations, actions, rules, and rewards in a situation. What is significant to this analysis is that standards of fairness are, in many cases, dynamic and specific to the situation and can vary from class to class. The teacher has the capacity to establish and, more importantly, change standards of fairness. Therefore, if the undesirable consequences of a dilemma can be construed as encroachments on what is considered fair, then opportunities for negotiating the situation emerge with fewer compromises to personal or professional integrity. Dilemmas need not necessarily be intractable “no-win” situations.

It became clear to me that a nontraditional classroom culture would have to be established where the roles, rules, expectations, and conceptions of fairness were renegotiated so that extended teacher-student interactions were perceived as a normal, valuable part of the classroom experience (see Figure 2). For example, the purpose of teacher questions would change. Instead of representing a tool for evaluation, monitoring, and controlling students, teacher questions would be associated with a genuine interest and valuing of the students’ knowledge. In such a context, students might be more likely to want to answer questions and give more elaborated, courageous responses. Furthermore, efforts need to be taken to reinforce the belief that this type of extended discussion does not suggest that the student must be wrong or confused. In fact, exactly the opposite would be implied. Continued conversation with a particular student would indicate that his or her ideas are insightful and important. Finally, when the teacher does not immediately call on other students in the class who wish to participate, these occasions must be made to represent opportunities for the students to learn from their peers. The work of Eleanor Duckworth (1987, 1991) stands out as an example of how research on student learning might be productively integrated with classroom teaching.

Accomplishing this change in the context of learning is not likely to be simple for several reasons. First, the conception of the teacher as the principle source of knowledge in the classroom and of teaching as didactic is deeply embedded in the students’ prior and, most likely, current experiences in school. Students will likely come to class expecting this kind of interaction and may resist efforts to change them. However, in any school system there are usually a small minority of teachers who take seriously and value the ideas of their students. Learning is seen as a worthwhile struggle to be engaged in by individuals and groups, rather than as an exercise of understanding and re-

![FIGURE 2. Changing the classroom context to support research and teaching](image-url)
membering the words of texts and teachers. The existence of these kinds of classrooms demonstrates that this kind of interaction is possible and responsible.

Second, changes in the culture of the classroom are not simply mandated and enacted by the teacher. Instead, the nature and intensity of engagement between the students and the teacher and among the students themselves is necessarily negotiated. Powell, Farrar, and Cohen (1985) describe these classroom “treaties” as agreements, almost always implicit, between teacher and students concerning what it means to learn. In changing standards of fairness, both the teacher and the students are moral agents with a right to say what should happen in classrooms.

Finally, changes in classroom conduct, although supportive of research activity, must always benefit student learning. In the case of Toni, for example, how could our protracted discussion about her incomplete, scientifically inaccurate explanation be of educational value to the other students? This kind of interaction may have done little to advance the class's collective conceptual understanding. However, current science reform movements (e.g., Project 2061) emphasize portraying scientific knowledge as tentative and dynamic, involving students in authentic tasks such as the construction of explanations, and fostering students' belief in the power and value of their own ideas. Within the context of these curricular goals, Toni's tentative efforts to explain her ideas and my interest and appreciation for her thoughtfulness are an instantiation of what it means to engage in science. As students attend to her ideas, they may be inspired with ideas and courage to develop their own explanations or to elaborate, concur, or disagree with what has already been said. Within this kind of classroom culture, my research and teaching might productively coexist. Again, this kind of perspective, expectations, and interactions would have to be negotiated and valued by both teacher and students.

What Can Be Learned From the Struggle to Be a Researcher/Teacher?

In this article, I have presented a specific example from my experiences to illustrate the kinds of issues that challenge the researcher/teacher. Although the particular features of my conflict may not apply to others, particularly those who are doing research on their own teaching rather than on student learning, I suspect that the difficulty associated with functioning in multiple roles in an effective and responsible manner is familiar to both university or school people. The goals of research and teaching can lead to logistical problems when planning exactly how one goes about doing both at the same time. In addition, the moral obligations and professional responsibilities of being the teacher are immediate and unavoidable. Although the tension between the methods of responsible teaching and sound research can seem particularly intractable, casting these dilemmas as issues of “fairness” highlights the socially constructed and, therefore, alterable nature of classroom culture. In some cases, the norms for classroom interaction and learning can be renegotiated by teacher and students in such a way that the goals and activities of research and teaching might productively coexist.

Finally, tensions of this nature are an inherent part of complex teaching rather than “problems” that we would be better off without. Professional growth is prompted and guided by an examination of one's purpose, action, and effect in the classroom. I was surprised by how my struggle to be an effective researcher/teacher led me to frequently and seriously consider general questions about teaching, curriculum, and research.

What does it mean to teach? Those who adopt the role of the researcher/teacher (or inquiring teacher, action researcher) frequently are employing innovative curriculum and teaching methods. In doing so, they will likely find themselves working against established conceptions of how teachers and students, or students and students, ought to behave in a classroom setting. Conceptions of fairness and, more importantly, the underlying implicit and explicit culture of behavior in schools reflect deeply ingrained assumptions about education held by the teacher, the students, the school, and the community. Changing the culture of the classroom to accommodate different patterns of interaction and new perspectives on what it means to learn and understand is likely to require a great deal of thought, energy, and time. The researcher/teacher will be required, therefore, to consider basic curricular questions such as “What are the goals of instruction, how will learning occur, and what are the roles of the teacher and students?” In addition, the differences between these intended curricular goals and assumptions will have to be compared and contrasted with those goals and assumptions implicit in existing practice. For example, in my own experience, I had to puzzle over why many students seemed to prefer to do tedious seatwork activities (e.g., worksheets) instead of engaging in what would seem to be more interesting, thought-provoking discussions.

What is worth teaching? In addition to questions of right or wrong conduct, questions about the nature of desirable ends for instruction also demand consideration in school settings (Tom, 1984). These curricular imperatives are captured by normative questions such as what really matters or to what end does one pursue a particular activity? (Shulman & Tamir, 1973). The researcher/teacher, therefore, also has a moral responsibility to make classroom experiences valuable for the students. Because this type of research consumes a considerable amount of in-school time and because that time is designated for instruction, the issue of whether the students are learning anything of worth becomes critical. In my situation, I had to seriously consider how and whether an extended discussion with Toni would benefit the class as a whole. How was my encouraging her to elaborate a confused, scientifically incorrect explanation responsible science teaching? The rhetoric that typically underlies this kind of teaching highlights the importance of allowing students to have and elaborate their own ideas. Valuing students' ideas ostensibly “empowers” them and enables them to feel more ownership of science. Whether this kind of teaching does accomplish these goals and whether students learn a significant amount of science content is an empirical question, and teachers and researchers should proceed accordingly.

In general, researcher/teachers and good teachers alike are constantly asking themselves whether what actually happens in the class is worthwhile teaching and whether it is better than the existing curriculum. New ideas are often disruptive and frequently discontinuous with pre-existing science teaching. What are the consequences of failure? If the curriculum or the teaching fails to lead to valuable
changes in the students' understanding, the implications extend far beyond an experimental failure to "reject the null hypothesis."

What does it mean to do research? The perspective of the researcher/teacher affords the potential for rich description and useful insight into the experience of teaching. However, certain features inherent in the researcher/teacher role might be perceived as constraints to research as it is typically conceived. To briefly summarize from my own experience: First, I devoted an unexpectedly large amount of time and energy establishing and maintaining a classroom culture that supported the type of innovative teaching that researcher/teachers and good teachers typically intend to do. Consequently, the effort and experiences associated with trying to get students to act and think in a different manner often provided the most vivid and interesting "data," regardless of the original focus of my research. Second, the environment of the classroom and of schools, in general, is extremely complex and unpredictable. My best-laid plans were often at the mercy of student absences, district testing, field trips in other classes, and special assemblies. These conditions forced me to rethink and relinquish traditional concepts of "control"—a fundamental element in the design, procedure, and analysis of research. Similarly, Atkin (1991) describes another infringement on conventional research control: The researcher/teachers themselves change during the research progresses as a result of events and actions. Finally, as a researcher/teacher, although my role as researcher was optional, my role as teacher was not. At all times, I had a moral and legal responsibility to treat students with compassion and create experiences that were educationally valuable. Given these responsibilities, the quality of the teaching necessarily takes priority over the quality of the research. Therefore, in addition to changing classroom expectations and culture in ways that support research activities, researcher/teachers must also consider seriously how research activities might be recast to be commensurate, integral, and important to the contexts and goals of teaching.

Notes

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Sociolinguists have identified several enduring, conventional patterns of talk between teachers and students. Lemke (1990) refers to these patterns as activity structures, while Czaden (1986) calls them participation structures. In addition to providing a predictable, orderly means of interaction, these patterns maintain and reflect other implicit elements of classroom culture such as the nature of authority and the nature of learning.

Although control is typically associated with the role of the teacher, students also exert a major influence on the expectations and practices of the classroom. Lemke (1990) describes actions such as "sidetalk" and not paying attention as tactics by which students protest or display discontent for established patterns of classroom interaction.

References


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