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University/School Partnerships: Bridging the Culture Gap

In the push for systemic reform in education across the nation, calls for the formation of partnerships among university and school professionals are prominent. If the list of participants responsible for drafting reform blueprints in science is any indication, partnership building has become a vehicle for massive restructuring of curriculum at all precollege levels, as well as for the professional development of teachers (see, for example, AAAS, 1993; NAS, 1996; NSTA, 1992).

Arguments for the development of partnerships in science abound (e.g., Gabel, 1995; Loucks-Horsley et al., 1989). The most common rationale goes something like this: In order for significant and long-lasting change to take hold in the way science is taught in schools, there must be substantial interaction between those with knowledge of scientific content and those with knowledge of students and schools. On the face of it, such an argument seems right and sensible. I admit to being a great fan; indeed, for the past 4 years I have been involved in collaborative teaching and research in high school science classrooms. In the pages that follow, I relate my story as a scientist who has willingly, even enthusiastically, been drawn into school-based collaborations of the sort that would be applauded by those writing about educational reform. I use this experience, which I think represents a kind of "best case" scenario, to explore the complexities, problems, and paradoxes of partnerships. While my story is about science, the messages it carries could just as easily have come from another discipline. What is central is the difference in cultures between university and school educators, irrespective of the disciplines they represent.

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Making the Journey

Several years ago, I held a faculty position in biology at my university. The college of education was making significant changes in its teacher education program at the time. Because these changes necessitated negotiations about coursework and credits among administrators in different colleges, and because of my outreach work in my own college (natural science), I became first an observer, then an active participant in these conversations. As a result, I met faculty from the department of teacher education. In the midst of these discussions, I was asked to serve as a science resource person at a local high school, which not long before had become a professional development school (PDS).[1]

Although intrigued by the opportunity to learn more about science curriculum issues by interacting with those whose primary work was in schools, I initially had only a vague understanding of what would be expected of me. That first year, I joined in conversations about teaching and professional development held among the science faculty at the school along with several faculty and graduate students from the college of education.

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Here is where my story differs somewhat from ones that others might tell. Most of these teachers were not strangers to me. I knew them from science outreach activities in which I had been involved for several years. I found the meetings comfortable and the discussions about teaching exciting. In fact, they did much to inform my own teaching of undergraduate science majors. I began to see possibilities for changing the way science could be taught to diverse groups of students. Before I knew it, I was pulled into an Eisenhower-funded project. I found myself, one year after teaching biology to undergraduates, teaching integrated science to tenth graders.

Both the development and teaching of this course were a team effort (Richmond & Striley, 1994). Several of us outlined our objectives over the summer and, in teams of two or three, taught the class for the entire school year. We planned daily within our teams. In these planning sessions, we talked about individual students' problems and breakthroughs, our feelings about how well we had illustrated a concept or responded to a confusion, and where we would go next.

At least once each month, planning meetings were held across teams, although cross-team conversations were in fact a daily occurrence, in the teachers' room as well as in our classrooms. We developed and graded our assessment instruments with one another and shared other responsibilities for the course. We compared our intentions with the newly developed state science objectives and shifted our instructional emphasis when we felt we might take better advantage of the course structure to help prepare students for the state assessment test they would take at the end of tenth grade. We talked with other science faculty at the school about the impact of our curriculum on other science classes.

The joys of teaching this class were enormous. Not only did I gain insights into what it means to construct a layered curriculum connected to other science courses, something we do not give enough thought to in our planning of undergraduate curriculum, but I learned pedagogical strategies that I took back into the undergraduate science and writing courses I was teaching. And through this experience the personal and professional friendship I already had with one of my coteachers grew richer and more complex.

As someone thinking hard about becoming increasingly involved in the field of science education, this year of planning and teaching represented a kind of intellectual conversion. The experience of teaching students on a daily basis, listening to their discourse with one another and with us, identifying concepts with which they had difficulty, and finding ways to help them come to understand them, all helped substantiate my growing conviction that what I cared most about were issues of how students' ideas about science develop and how information about that development might be better used by teachers.

At the same time, however, it was becoming clear to me that the worlds of high school teaching and college teaching are quite different, and that these differences pose particular challenges for involvement in educational partnerships. Below I share four issues that arise from different perspectives held by university and school professionals. They have been particularly significant in shaping my perceptions. I try to illustrate how these perspectives lead to different approaches, each of which in isolation is incomplete and problematic.

Struggling With Differences

The meaning of team teaching

For university science departments, it is not unusual to have what are called team-taught courses. In fact, I have been involved in several. The problem is that no one really knows how to team teach, in part because we begin with different assumptions regarding both preparation and instruction. What typically is meant by team teaching is really a series of guest lectures in which different faculty members teach their particular specialty and later contribute questions to the common exam. Rarely do those contributing to such a course even speak with one another about the details of what they plan to teach, let alone make an effort to determine common concepts or themes. They certainly never discuss their perceptions about student understanding or their own classroom performance. It is rather like a relay race, with each lecturer passing the baton to the next on the team, though I often have the feeling that no one would know if the baton were dropped, because everyone's attention is focused on an individual leg of the race.

While team teaching is not the norm in schools, it does occur, and when it does, it typically involves co-planning and coteaching, sharing content and pedagogical experiences. In our case, it involved three

women—a science teacher, a university science educator, and a scientist—sitting around a table each day after class, having complicated, sometimes awkward, but always useful conversations about our understandings of what was happening in the classroom, our feelings about how well we were helping our students, and negotiations about where to travel next.

While it may appear that the latter approach to collaboration is preferable, it is not efficient and may not be satisfying to all concerned. If the teaching partners are equally committed to the endeavor, negotiations about content and pedagogy are substantial and time-consuming. If partners hold differing views, the process of compromise may be draining and the results, while perhaps better for the students, more frustrating for the instructors.

Compared to this, teaching individually or within a multiple-instructor group is easy, or at least, more straightforward. The planning and performance are not dependent on integration with other course segments or on other colleagues' perspectives or feelings. The tradeoff, however, is the loss of some of the richness of subject matter and pedagogical strategies experienced from learning our colleagues' differing "takes" on issues related to our discipline.

What it means to know something

For scientists, the frame for knowledge building is reductionistic. The goal is to discover essential elements and rules for constructing larger entities from combining those elements. In contrast, the focus of educational research and teaching appears to be ever more holistic, looking at the relationships between individuals and their environments, which may include individual students, entire classes, or an entire school. The process involves trying to think simultaneously about the roles of student learning, teacher knowledge, classroom dynamics, and equity issues, among others.

When I first entered the "blooming, buzzing world" of a classroom, I was overwhelmed with its complexity, as I think many of my science colleagues would be. My inclination was to try and isolate the events that were occurring, rather than considering that it was in the interaction of these events that the interesting and important dimensions of learning were likely to be found. The trick, perhaps, is to see both the individual elements and the ways they influence one another.

Behavior and expectations of students

There are important differences between college and high school students in how they behave and what they expect of their instructors. First, those of us engaged in teaching college students have no appreciation of the role that authority issues play in elementary and secondary schools. Despite the occasional professorial complaints that some students are less mature than others, we generally do not have to confront these issues when teaching at a university. In a high school classroom, however, teachers confront them on a daily basis, and talented teachers are able to weave management strategies almost seamlessly into their interactions with students and content.

There also are fundamental differences in what precollege and college students think is worth learning. I remember one day being stymied by a challenge issued by one of our high school students about why he should have to understand what causes cholera, the case study we had developed as a major focus in the course. When I tried to formulate a reasonable response, beginning to talk about what this information would help him understand, he replied that while that might be important if he were going to be a doctor, he had no such intention and therefore it really wasn't relevant, was it?

College students, on the other hand, rarely overtly challenge the relevance of course materials. I have memories, particularly early in my teaching career, of looking out into a sea of puzzled faces in the large university auditoriums in which I taught. Not one of these students ever raised a hand to question the relevance of what I was trying to teach. With these students, I have never experienced anything like the challenge issued by that 15-year-old with the buzz cut. My college students' questions are usually of the "help me understand" kind. These form the basis for most of my office hour conversations as well. Students who venture into the world of higher education seem willing to defer questions of relevance or closure; after all, they are in it for the long(er) haul. Perhaps they persuade themselves that, even if material does not have clear significance in the short term, it will at some later time, or in some other course. These examples represent different demands placed on a teacher in terms of what needs to be justified and how to translate this into effective teaching.

Adult discourse

The discourse structures of schools and scientific communities are fundamentally different. In all the scientific (university) communities in which I have participated, communication has been characterized by the "Let me show you how my idea is better" approach. That is, the norm is to strengthen your position by engaging in persuasive discourse or challenging others' views. In schools, however, even if there is disagreement, the norms for proceeding are much more egalitarian; the professional discourse here is characterized by the "Let's find out what all the ideas are" approach.

These norms are obviously in stark contrast with one another, and they have very different implications for how ideas are exchanged and knowledge is built. In the end, the norms for substantive discourse in both communities fall short. The university discourse often escalates into a battle of wills and the substance is lost or, worse, a decision is made that reflects the will of a few and raises the ire of many. In schools, so much effort can be spent in trying to avoid offending or alienating participants that little gets accomplished and frustration results.

Conclusions

I have outlined four issues that have significant—and different—implications for the way work is done in university and school communities. Each of these represents an opportunity for productive and invigorating exchange on the one hand and a potential impediment to collaboration on the other. In my case, each of the issues made my decision to work in schools more difficult. I developed a personal strategy that made the decision easier. Because I knew neither the pedagogy nor the population of public schools, and because I wanted to understand something about students' worlds and teachers' translation of knowledge to fit these worlds, I decided early on to keep my mouth shut and my eyes open. I deferred in many instances to the experienced teacher who was helping me navigate this culture.

Now I think I understand how to talk in a school. It is not simply that I know the vocabulary, but rather that as a result of my "immersion" in school culture, I understand the culture better. I endeavor to listen carefully, to get everyone's views on the table. I am rewarded for these efforts and believe in their value, although I continue to struggle with ways to make school people happy, help them feel empowered, and still get a fair public consideration of my own ideas. In many ways, my "school persona" is under development and in tension with my training and experience as a university academic (and scientist to boot).

There are, of course, a host of other important issues that accompany partnerships. For example, it is usually assumed that each individual who enters into a collaboration brings one kind of expertise. Witness all the language in reform-related documents singularly valuing scientists for what they know about the content of their discipline but failing to acknowledge the often extraordinary knowledge held by science teachers. The fact is that people bring several kinds of knowledge, some helpful and some detrimental, to a successful partnership. In addition, professionals from different cultures see the usefulness of their discipline's knowledge base in different ways. The challenge is to understand the cultures of the various players and to foster a sense of belonging, regardless of the cultures involved.

I have had distinct advantages during the initial stages of my journey into the education community. Even with these advantages, my professional growth has been a slow one. But the process has taught me an important lesson: There is a long list of things that scientists do not know and teachers do, and there is another long list of things teachers do not know and scientists do. As a result, several issues need to be addressed by those who would promote or contemplate partnerships. What are the best conditions under which to bring these groups together? On what points do both groups have to agree to learn from each other and collaborate? On what issues is it reasonable to have different perspectives? Does a scientist have to give up some beliefs to enter a school? Similarly, does a teacher have to give up some beliefs to collaborate with a scientist?

I do not have answers to all of these questions, but I do know that in order for such partnerships to be successful, what is achieved in the collaboration must be greater than what any of the members of the partnership could have accomplished individually. And all the players must have a significant commitment to using their expertise along with that of the others to enhance both teaching and learning.

There is much to be gained by partnerships between scientists and teachers. However, in order

for these collaborations to succeed, a shared set of rules governing language as well as goals must be developed, and respect for differences in perspective and values must be maintained. The authenticity and value of collaboration lie in the ability of participants to communicate effectively across their different cultures. The differences that exist are what make each professional good at her or his job and, when conversations lead to action, provide opportunities for significant reform in both communities.

Note

1. Professional development schools are sites at which staff is committed to educational reform, and where educational theory and practice are merged, and where these objectives are achieved through partnerships between the school, community, and postsecondary institutions, particularly those with strong teacher preparation programs. At the high school referred to here, this has meant a wide-scale commitment to student-centered instruction and whole-school emphasis on professional development activities that benefit both staff and students. Some of the ways these commitments have been enacted include teachers undertaking and being supported in instructional projects, electing their own administrators, teaming with university educators to teach the university education or high school classes, and mentoring students in the field-based components of their teacher preparation program. One of the decisions made by school staff, for example, was to lengthen the school day and adjust the overall schedule so that each Wednesday morning could be devoted to discussion of whole-school issues, as well as small group discussion of ongoing projects and policies.

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