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Journal of Teacher Education 2004; 55; 393

DOI: 10.1177/0022487104269652

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<http://jte.sagepub.com/cgi/content/abstract/55/5/393>

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FROM INSPIRED VISION TO IMPOSSIBLE DREAM

THE DANGERS OF IMBALANCED MENTORING

Judith H. Shulman
WestEd

This article will present a case study of an unrequited teacher-learning collaboration, an attempt to work with an experienced teacher to redesign his practice in consonance with Fostering a Community of Learners (FCL) principles and practices. The author's purpose in presenting this case will be threefold: first, to provide a coherent account of a modest attempt to assist an experienced teacher to reform his practice within a school context that was itself at least as traditional as the teacher himself; second, to use this account to illustrate the usefulness of a conceptual framework for representing how teachers learn and think about the essential features of teachers' capacities that are the focal points of change; and third, to offer a process analysis of a teacher learning not to engage in a new practice and doing so in an intentional and reflective manner.

Keywords: *mentoring; classroom teaching; constructivist reform; science*

Much of the literature on mentoring is filled with compelling accounts of the efficacy of special kinds of intimate collaborative relationships between teachers and researchers. Most of the theoretical work on mentoring has been invested in describing and classifying the character of the mentoring relationship itself, that is, a relationship characterized by "technical coaching" (Joyce & Showers, 1981) or "reflective coaching" (Schön, 1987), "personal" or "formal" (Feiman-Nemser, 2001; Little, 1990). The literature also has stirring accounts of intensive, personal collaborations between researchers and teachers that resulted in radical changes in teachers' practices (see e.g., Cohen, McLaughlin, & Talbert, 1993; Rico & Shulman, 2004; Tharp & Gallimore, 1988) as well as poignant accounts of teachers who thought they had made such changes but appear to have deluded themselves (Cohen, 1991). Scholars have

been less interested in the question of what changes or fails to change over time as teachers attempt to adopt new ways of thinking and practicing. They have also been less interested in detailed analyses of the process of not learning new practices, which is itself a learning experience.

The case draws from a larger project called Fostering a Community of Teachers as Learners (FCTL), a modest study designed to investigate how novice and experienced teachers can learn to teach using the Fostering a Community of Learners (FCL) approach. This constructivist pedagogy was developed by cognitive psychologists Brown and Campione (1996) to promote critical thinking and reflection skills underlying multiple forms of higher literacy. The following three components characterize an FCL unit: independent and group research, sharing information, and performing a consequential task.

Author's Note: I thank The Andrew W. Mellon Foundation for funding this study, and I thank Lee Shulman, Miriam Ben-Poretz, and Carolyn Krohn for their thoughtful feedback.

Journal of Teacher Education, Vol. 55, No. 5, November/December 2004 393-406
DOI: 10.1177/0022487104269652
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Students become experts in a topic area in small "expert groups," teach one another in reconfigured jigsaw groups, and then apply their knowledge to a new task and teachers, dialogic discourse, and distributed expertise. The work was complex, and project staff were constantly reminded of the difficulty of this particular constructivist reform, especially for teachers whose initial practices and beliefs conflicted with the thrust of the reform.

In this article, I use the case of Jerry, a highly experienced science teacher attempting to adopt a community of learners model, to examine how he experienced the learning of these new ideas and practices and why his mentoring experiences did not enable him to achieve the kind of changes he had hoped to accomplish in his classroom. Unlike Mrs. Oublier, who was unaware that her teaching was not coherent with a constructivist mathematical reform (Cohen, 1991), Jerry was fully conscious of the differences between his reform visions and his final practice—and was content to remain as he had been. Thus, this case is an extended collaborative account of learning not to practice.

THEORETICAL FRAMEWORK

I will argue that for a teacher to adopt new practices, he or she must be ready, willing, and able. That is, the teacher must hold a compelling vision of a desired future condition in his or her classroom or school, must be motivated to pursue that vision, and must have the ability—both intellectual and practical—to translate his or her vision from attractive fantasy into practical reality. I am thus arguing that the process of collaborating with teachers as they learn a new pedagogy requires that we be sensitive to more than their theories and their specific practices. Their learning will be a function of their status on the following three interdependent factors: vision, motivation or commitment, and ability, both cognitive and practical.

These elements are commonplaces of teacher development. Any serious attempts to help teachers change must consider both their current status and the status they intend to attain

with respect to these factors. When we begin work with teachers, we must first ask the following questions.

1. Vision: What are their current visions of exemplary educational practice, of what counts as student understanding and learning, and of an ideal classroom and its organization? In contrast, what is the vision that underlies the desired reform, and how compatible or incompatible is that vision with the teacher's current ones?
2. Motivation: What are the sources of motivation or persistence that energize this teacher's actions? How is the teacher's motivation connected to his or her vision, understanding, and practices and their consequences? What concerns does the teacher have that might constrain his or her motivation?
- 3a. Ability, understanding: What are the current understandings that the teacher brings to the effort? These include his or her understandings of the students and their capacities, of the principles underlying the pedagogical practices, and of the curriculum content to be taught and learned. How compatible is the teacher's current understandings with those needed to implement the reform?
- 3b. Ability, practice: What are the current classroom practices that characterize this teacher's work? These include the practices of planning and implementing units of instruction, of managing the participant structures in the classroom, and of assessing student learning. How compatible are these practices with those needed to implement the reform?

If vision, motivation, and ability are the individual commonplaces of teacher work, these features have a community or group-level analogue. They have their parallels in the teaching community or context within which the teacher works. That is, to fully understand why individual teachers do or do not choose to change their teaching, one should examine whether there are collective or shared visions that characterize the institution or teaching community. One can ask what theories or practices characterize the teacher community more broadly. One can ask what motivates the participants and what are the incentives that inform their commitments. By examining these features of the individual teacher as well as the teacher's community and by documenting both the prior status of these features as well as how they respond to collabo-

rative intervention, we can provide a conceptual and analytic tracking of the effects of mentoring on the thoughts, actions, and feelings of a teacher engaged in reform.¹

THE CASE OF JERRY²

I will now illustrate the application of these theoretical constructs to the case of Jerry,³ a teacher who participated in a program to foster FCL teaching of middle school science. I begin by characterizing Jerry and his context, using the features outlined earlier as my guidelines. Next, I characterize the forms of FCL that we were implementing, again in terms of those features. I then describe how Jerry responded to the various forms of individual and group interventions designed to guide and support his changed practice. Finally, I will interpret the impact (and lack thereof) of our efforts in terms of the model of teacher learning.

This case therefore is used in an attempt to accomplish the following three purposes: to provide an account of a specific attempt to change practice via mentoring, to illustrate the usefulness of a theoretical framework in explicating the course of that mentoring, and to offer an interpretation of the nature of mentoring toward constructivist pedagogical reform when one begins with significant incompatibility between both the individual and his or her context and the principles of the reform.

Background

At the time of this study, Jerry had been a teacher and administrator in the Bay Area for 25 years. He served as the science teacher for 170 students on one of two eighth-grade teams at Lincoln Middle School. He also served as chair of the middle school science department and hosted the chess club during lunch. Jerry had a calm, low-key manner, a quick wit, and a relaxed teaching style. He often talked about how much he liked the kids at Lincoln. They appeared to like him too. For example, one researcher noted that a boy asked her if she was "looking at the teacher." Then he offered, "He's a good teacher. . . . He's nice; he helps you; and he makes

you understand. He's the best science teacher" (classroom observation, November 21, 1995).

Jerry's decision to go into teaching was strongly influenced by his family, who were all educators. His father was a superintendent, his mother and most of his relatives were teachers, and his sister was studying to be a teacher. "So going into teaching seemed like the logical thing to do" (interview, December 5, 1995). Although he enjoyed teaching, he spent several years going to school pursuing higher degrees. As a result, Jerry's academic background is much more extensive than most teachers. He has a bachelor's degree in biology, a master's degree in administration, and a Ph.D. in higher education. Although he chose to forego an academic career in higher education after completing his doctorate, Jerry enjoyed his graduate studies. "I just wanted to get to the highest point I could."

Jerry portrayed himself as a frustrated academic. Although not denigrating his role as a teacher, he noted that he missed opportunities to interact with colleagues at a higher level, as he had during his Ph.D. years. To that end, he participated in a number of research projects during the past few years. Indeed, one of the reasons he joined this project was the opportunity to interact with university colleagues.

Pre-FCL Teaching

The data for this section were drawn from interviews during the fall of 1997. By this time, Jerry had already participated in a weekly discussion group during the previous spring, a 2-week seminar during the summer, and several meetings during the fall.

The development of vision. To get a sense of Jerry's vision, I asked him to describe an ideal classroom (background interview, December 5, 1995). This question seemed to catch him off guard; he had been pleased with the way his students were learning this year. With some probing about how he would teach in a model classroom however, he grabbed on to the model of FCL. "You could teach anything to kids using FCL, but I would need more materials and technology and more than one teacher to make it work."

Jerry's description of his vision became more vivid when he was asked what was exciting about these methods. He depicted his FCL as an elegant system in which he would facilitate learning rather than controlling it. Students would be motivated to "take on the challenges of the curriculum" because they participated in their own learning. He described students as being excited because they could determine their own questions, have a part in a research group, and "have a say" in how the curriculum was assessed. "If they can accept the rules and the teacher had the time to make all this happen, the results are going to be astounding." Students would work together collegially and collectively to determine what's worthwhile to learn. They would treat one another with respect and gain self-esteem because of their participation in groups. They would be able to stand in front of class and make presentations on their own work rather than act "as parrots, saying what's expected." And finally, the community of students and teachers would make the classroom a more exciting place to be. "It's very difficult [for a teacher] to make things exciting every day."

Jerry went on to describe how FCL could help with a host of problems he saw in his classroom. Improving reading comprehension through reciprocal teaching was one example. Heterogeneous groups of kids—actively reading and discussing difficult texts together—might solve the problem of the huge gap in reading levels that exists among his students.

I think the end result will see that students will increase their reading comprehension, writing skills, will develop the whole person, will improve their self-esteem and respect and working with others from all the social factors . . . all part of the community.

In short, Jerry depicted quite an elaborate and idealized vision of FCL and what it could accomplish. "I'm interested in the whole concept of FCL. I just want to see if it can work and see if I can be a part of it and see if I can make it work" (interview, September 5, 1995). Jerry saw FCL as a system, an "it" that was all thought out and organized and if he followed this "it," the vision of FCL would materialize in his class-

room. This idealized interpretation of what the FCL model represents, I will argue, created the incentive that attracted him to this reform but ultimately worked against him when he tried to implement his unit and set him up for disappointment. It is interesting to note that this vision of FCL was recounted after two particularly "exhilarating" meetings with a curriculum consultant, Diane, a biologist and one of the founding collaborating teachers with Brown and Campione's (1996) FCL original study. Before these meetings, Jerry had wavered about whether he even wanted to participate in our re-inventing project. After them, he espoused a vision of FCL teaching.

Willing and motivated. Jerry's decision to join the project was influenced by several factors. Initially, he and the other members of his team were encouraged to join by two teachers who had worked with me on a previous project. They thought the team would benefit if it worked on a particular project together. Moreover, FCL intrigued him. During the previous year, he had worked with an enthusiastic student teacher who had implemented a community of learners (COL) unit with her supervisor. Perhaps most important however, he was motivated by the opportunity to participate in some real research and to interact with project staff and FCL consultants, which fit with his vision of himself as a scientist and scholar.

But Jerry's motivation for the project ran hot and cold. By the end of the summer institute, he noted concern about the amount of work that it entailed developing appropriate curriculum. He worried about his capacity to effectively monitor seven or eight research groups alone. And he realized the extent to which his teaching style differed from the constructivist vision of FCL. During the fall quarter however, his interest rekindled after I arranged for him to meet with Diane to plan his unit. He said that the meetings were "fabulous" and signaled a dramatic change in his feelings toward the project. At the same time, he discovered that he would get a student teacher the following semester, which diminished his fear about attempting FCL alone.

In sum, Jerry was not motivated to learn about FCL because he thought his students were not learning. On the contrary, he felt he had had a good year. He joined the project because of both the opportunity to interact with university colleagues and his intrigue with the grand vision of FCL. But his willingness was also tempered by reality. He worried about the “time factor,” wondered if he could pull it off, and was concerned that he might feel stuck once he began his unit (interview, December 5, 1995).

Understanding. Although Jerry could intellectually expound and even explain the principles underlying the pedagogical practices, unit design, and participant structures of FCL, he was quite aware that the implicit theories that supported his current teaching methods were much more traditional. He portrayed himself as a transmitter of information and knew that this was inconsistent with FCL principles.

My units are pretty much teacher directed. I provide the instruction; I raise the questions through demonstrations, and then have them work in pairs on activity sheets. We'll have class discussion . . . always go to labs as a class, followed up by tests and quizzes, that sort of thing. (interview, December 5, 1995)

He understood that the FCL rested on a different kind of teaching, but he had no theory or practice for this kind of teaching. Moreover, we had neither videotapes nor access to local FCL models that might help him move from abstract theoretical pronouncements to more operational theories.

Jerry was less aware that his view of what counts as knowledge was different from the FCL view. Although Jerry could intellectually describe the importance of gaining a deep understanding of generative ideas, he did not appear to discern for example that this kind of knowledge required opportunities for kids to talk to one another about the ideas and to reflect on their learning. Rather, his conception of what is important to learn focused primarily on factual knowledge, which could be transmitted among students in small expert and jigsaw groups. This misunderstanding of the goal of discourse was the key to the subsequent difficulties I encountered during several debriefing

sessions around reciprocal teaching and jigsaw episodes (see the following). He appeared to adapt the theoretical talk of FCL practice without challenging his conception of knowledge. Put another way, he had a theory of FCL pedagogy along with a traditional epistemology.

Practices or skills. As noted earlier, Jerry's well-habituated instructional practices were radically different from those in the FCL model. His description of his teaching—lecture/demonstration/discussion/laboratory/exam—was pretty typical of the fall chemistry units. In the three classroom observations made during this unit, I noticed that his mode of teaching was similar to many veteran science teachers. He gave lectures with appropriate demonstrations, developed engaging laboratories that students appeared to enjoy, had a reasonable sense of how the content should be scaffolded, and had a clear focus on the scientific method that wove throughout the lessons. He also enjoyed talking with individual students and had few management problems. Jerry's tolerance for socializing among students during group work was higher than other teachers on his team, but he did not regard it as problematic because they were generally “on task.” He never had a problem getting students' attention.

How did his typical practice compare with FCL practice or constructivist teaching more broadly? I noticed few opportunities for students to examine ideas during Jerry's lectures. He invited questions but usually provided the answers, either himself or with help from others. He rarely raised questions to stimulate curiosity or left a question hanging and invited students to explore it themselves. In his laboratories, which were his favorite part of the curriculum because they focused on investigation, he neither encouraged group discussion around procedures nor considered big ideas. Instead, the object of the lab focused on completing procedures and filling out lab sheets. I saw little evidence of examining the ideas behind the investigation, either within the small groups or as a whole group. Moreover, Jerry's assessment of student learning drew primarily from quizzes,

tests, and worksheets that were predominantly based on discrete facts.

Other differences between the laboratory structure of group work and the participant structures associated with FCL were evident. There was no need for interdependence among group members because everyone was working on the same task. There was no group accountability for a task because students were responsible for their own lab sheets. And perhaps most important, all of the lab groups were involved in the same task. In FCL, expert groups work on different tasks, which places far greater demands on the teacher, who has to monitor what happens distinctively in each group.

Context

No teacher works or is mentored in a vacuum. If the previous description of Jerry's vision, motivations, understanding, and practice are the individual commonplaces of teacher work, how well did the teaching community or context of Lincoln Middle School support his efforts (see Cohen et al., 1993, for the importance of this kind of support)?

Lincoln Middle School is one of two middle schools in the district, which is located in an increasingly diverse suburb of San Francisco. Its student population is 50% Latino, 35% White, 10% Black, and 5% Asian. The school is organized into teams of teachers who have a common preparatory period and weekly team meeting scheduled during the school day. This site was selected because of its organizational support of teacher communities, its history of collaborative relationships with the university as a placement for student teachers, and the apparent enthusiasm of district officials and the principal for the goals of the project. All of the teachers on one eighth-grade team and two additional science teachers wanted to participate in the project. The team had been together for several years and considered their team to be one of the best in the school (personal communication).

The principal envisioned Lincoln as a school that worked hard to meet the needs of its diverse student population. FCL was just one of

many concurrent reform initiatives (e.g., a new reading program, a new math program with a special math resource teacher, and a new computer laboratory; plans were also underway for making the school a math-technology magnet school the following year). Although the principal was supportive of the goals of FCL and proud to be associated with the university, the more elusive ideals of teaching for understanding in a community of learners took a backseat to the constant pressure to raise reading and math scores.

Lincoln created significant challenges for its teachers: large class sizes, a growing proportion of limited English-proficient students, increasing mainstreaming, and high absenteeism were among the most obvious. Teachers often talked about the low skills of their students and appeared to have developed modest expectations for the quality of work completed and turned in; they seemed pleased if they received assignments from 60% to 80% of their students.

Jerry was the science teacher for all 170 students on his eighth-grade team. He taught five classes, each of which had between 33 and 39 students. Except when he taught his FCL unit (see the following), students sat in rows of long tables (two to a table) facing the front of the room. Jerry's classroom was adjacent to a modern science lab.

The eighth-grade team met weekly and dealt primarily with program logistics, potential field trips, high-profile activities, and discussions about individual kids, district mandates, and so forth. Thus, although the team had the structural elements of a learning community, it did not have the intellectual features of a learning community. This reality had a direct effect on the project. When participating teachers had been asked when they wanted to discuss project-related events, they voted to handle these during every other team period (they had been reluctant to schedule these meetings after school). But it soon became apparent that fitting in meaningful dialogue about the project during this hour was a lost cause—not because teachers were uninterested; they had other “pressing” matters to consider. As a result, we scheduled 3 full days of in-service, off-site meetings during

the year to ensure time for discussing project concerns without the constraints of competing agendas.

Eighth-Grade Team/Opportunities for a Learning Community

In general, Jerry was an isolate among his colleagues. Unlike several teachers who planned units with colleagues, Jerry neither had a planning partner nor sought one. Moreover, he felt detached from his department because teachers rarely came to department meetings. For several years, he had served on a district science committee that stopped meeting the previous year. "So it's like living in your own world" (interview, January 7, 1996). The only possibility of support came from the team meetings, but he noted deep resentment for the time spent in these meetings as well.

We never seem to get anything accomplished. . . . I'm older and the only man on the team. . . . You can put most of what happens in team meetings in a paragraph and send it in an e-mail message. . . . I enjoy the women. But we never seem to get anywhere. . . . There never seems to be any answers.

Jerry seemed most positive about the team when it discussed FCL matters. He thoroughly enjoyed the three in-service days we had scheduled off site. But these opportunities were so infrequent that we could see little benefit. He never observed another colleague's teaching (although we had provided the resources to do so) or sought counsel from other teachers outside of our organized meetings. In sum, neither the context nor the presence of a teacher community provided much support or incentive (Elmore, 1996; McLaughlin, 1995) for Jerry to incorporate constructivist methods into his teaching. Without these, the burden on individual collaboration was enormous. The rest of the article will focus on the complexity of these individual relationships.

One-on-One Collaboration

Each participating teacher on the FCTL project was assigned to a project collaborator, who both documented their learning and provided

support for designing and implementing their FCL unit. I was the staff person assigned to support Jerry and document this study. Because I had no background in science, I arranged to have Diane, biologist and founding FCL teacher, to help him conceptualize a community of learners unit. Jerry looked forward to working with both of us and respected what each brought to the table. But our experiences differed. He was "exhilarated" with the intellectual challenge of the planning experience and increasingly frustrated during the implementation phase. This section will focus on the contrasts between these experiences and his simultaneous fluctuating motivation for FCL.

Planning the unit: An inspired vision. During the fall term, Jerry and Diane had three 2-hour planning meetings and continued their dialogue over several phone conversations. Jerry was captured by Diane's presentation of her vision of FCL during the summer institute and her understanding of biology. Diane was equally taken with Jerry. He exhibited a wealth of knowledge in both biology and physical science; he could grasp big ideas and divide them into jigsawable parts better than most teachers with whom she had worked; he appeared enthusiastic about the principles of FCL and the vision of a COL classroom; and he could take her suggestions, "make them better, and come up with his own equally interesting ideas" (personal communication, December 10, 1995). One of Diane's interests was to develop COL curriculum, and she saw Jerry as an excellent collaborator.

Their task was to develop a unit that could begin in February. After initially envisioning a semester-long unit that would integrate physical science and life science, they ended up developing a more modest unit that was more practical. Their unit focused on the heart and its interconnections with the circulatory system. Research groups were planned to deal with (a) service and repair (diseases and treatments), (b) interconnections (between the heart and other parts of the body), (c) transportation (blood circulation), and (d) engine (function of the heart). Each expert group would do a small research project and make both a concept map and

model representing their group. Then the students would redistribute into jigsaw groups and make a new model and map integrating all the groups. Jerry tape-recorded the consultations, took notes from the tapes, and began generating ideas for questions and research groups before each session. This was an exciting time, and he communicated his enthusiasm to his teammates at a project seminar. But at the same time, he was daunted by all the practical work entailed with gathering appropriate resources. He had spent numerous hours on the World Wide Web and had found only a few appropriate articles.

As Jerry and I prepared to move from conception to implementation, I began to note potential practical problems. One related to the reading levels of the articles that Jerry had collected from the Web. I had spent time in Jerry's classroom and saw that many students had difficulty reading text material. But when I asked whether all students could read the articles, he responded, "You guys have this all figured out, don't you?" (planning meeting, January 15, 1996). This answer signaled some naiveté about what the structure of a COL unit could achieve. Perhaps he thought that planning a conceptually sound unit would take care of all of his students' reading problems—that it was a flaw in the model and not in his planning if the students could not do the work. This prospect left me uneasy. It confirmed my impression that Jerry had an idealized vision of what an FCL model of instruction could accomplish. Another problem related to the unit design that he had created. I questioned whether some of the themes were too abstract for Jerry's students to research without a great deal of scaffolding and wondered whether his ambitious vision was rapidly losing touch with the practical theories and complex practices that would be needed to enact the grand vision and the elegant design. Jerry would need to spend a great deal of time scaffolding experiences that would enable students to develop successful research and group experiences. I also wondered whether he understood the principles of such practice and was sufficiently skilled in the necessary practices.

What was clear however was his motivation to teach the unit. Although he was worried about all the work the unit entailed and whether he could "carry it through," he still looked forward to it.

The whole puzzle of this is what keeps me in the trenches. . . . I just kind of like the idea of a new teaching approach that seems to have possibilities . . . and I'm quite anxious to have an opportunity to try something different . . . just like a scientist has to try lots of things before finding something to grab on to. (interview, January 10, 1996)

Preparing to teach the unit. While working with Jerry on preparations for implementing his unit, I encountered several surprises. The first involved his semester-long unit on the human body, within which his new FCL unit on the circulatory system would be embedded. Unlike his earlier chemistry unit, which had laboratories, this one required predominantly passive learning based on a textbook. Students read a chapter using detailed study guides, answered questions on worksheets, participated in a laboratory, and took a published exam. I was struck by the radically different approach to practice his new FCL unit represented and hypothesized that a sudden change to a more constructivist approach would be too abrupt for some students. At this school, students were accustomed to teachers telling them what to learn. Why should they buy in to this sudden change? I was particularly concerned about the students who had difficulty reading and wondered whether they would be able to both work independently and contribute to their small group.

I knew that I needed to "find openings" (Feiman-Nemser, 2001) to address some of these concerns, but Jerry appeared resistant. He preferred to focus on getting the unit ready during our time together. I was also surprised to discover that Jerry had never directed student research—even though it represented a major part of his new unit—and we went over what that entailed. Because this was a first research experience for many students, we discussed having students contribute brief sections to a group report. These reports would be based on the questions generated from his anchoring event—a discussion on the video *Hemo the Mag-*

nificent. We also discussed what concept maps might look like for each research group. I was again surprised to discover that he had no idea what these maps might look like given that they were so important to his unit. This discussion was followed by such topics as how to handle groups that were engaged in different tasks, alternative assessment, and so forth. At one point he said, "Diane and I spent a lot of time talking about the curriculum, but talk is cheap. I realize I've got a lot of work to do to flesh out how I want to teach the unit" (February 1, 1996).

At this point, I realized what a revolutionary conceptual and practical effort this unit represented for Jerry. Besides embarking on several new participant structures and pedagogical methods, he had misjudged the entering skills of his own students. He had not realized, before I asked other teachers, that students had never been taught to do a research report. Now he understood that he would have to spend time teaching students how to do research; he resented this encroachment on his "science time." "Language arts teachers are supposed to teach these writing skills!" Time was looming as a big problem. I asked if he wanted to scale back any part of the unit—research reports, concept maps, laboratories, or models—but because of his driving vision, he was committed to all of it.

To add to the aforementioned problems, Jerry's first attempts at some of the new participant structures failed. At my encouragement, Jerry tried a few COL-like activities before beginning his new unit. One was on concept maps. We thought it would be important to let students practice developing maps before they were required to produce them. However, students had much more difficulty designing the maps than he had anticipated.

He also tried a complex lesson that combined both jigsaw and reciprocal teaching (RT). He wanted to see how each of these structures worked. We had discussed RT in depth during the summer institute and reviewed the basic principles before this lesson, although I had not seen the actual lesson plan he had developed. Again he was disappointed. His assumption that students were proficient in RT, based on other teachers' reports of using it in their class-

rooms, proved to be inaccurate. But there were other problems as well. He simply had not planned a good RT lesson. The one-paragraph texts for each group were too simplistic and fact based to stimulate a generative discussion. These paragraphs did not lend themselves to the kind of questioning behaviors associated with RT—questioning, clarifying, summarizing, and predicting.

What occurred was that most students dismissed the questioning part of the assignment in their RT groups and proceeded to answer the questions on their worksheet; there was little discussion. Some groups had faulty questions, which left them floundering. Moreover, when students reconstituted into jigsaw groups, individual group members merely presented their information while the others copied it onto their worksheets; there was rarely any dialogue about ideas.

In our debriefing session after the lesson, Jerry did not appear as frustrated as I was. Although he did not think it was a great lesson, he was pleased most students talked to one another and turned in their worksheet (informal interview, February 15, 1996). When I noted that students merely seemed to copy the presenters' information instead of discussing the ideas, he did not seem bothered. "It's OK that they copy. That's what they're used to doing. At least it gives them motivation to do some work and be accountable."

This discussion signaled problems of both conceptual understanding and expectations for students. Jerry had not understood that the purpose for RT and jigsaw groups was to stimulate a good discussion, not simply to exchange facts. When I pointed out this discrepancy and explained why the paragraphs did not lend themselves to dialogic discourse, he seemed surprised. He wondered why students shouldn't focus on presenting the facts. Clearly our initial focus on a constructivist conception of student learning was getting lost. As we continued to debrief the lesson, I showed him notes of students' conversations that revealed why they had difficulty answering questions on the worksheet. Jerry found this conversation interesting and proceeded to change the worksheets

for the afternoon classes. At the end of our debriefing session, he sighed, "I'm glad I tried this. But it was a lot of work for so little gain" (February 13, 1996).

By the end of February, Jerry's current text-based unit was progressing like clockwork, but he seemed tired of preparing for his FCL unit. In a research memo I wrote,

I'm beginning to understand that Jerry's initial strong sense of vision and motivation is being mediated by the reality of how much work this unit is. He's getting tired of working on weekends... setting up groups, looking for resources, etc. And he appeared uneasy, perhaps scared that the unit won't go well even after he's put in so much work. He seems particularly uneasy that the kids won't be able to generate good questions, which is at the core of the unit and research groups... I am unsure how to proceed. (memo, February 15, 1996)

This memo represents the extent to which Jerry and I as a support provider were both struggling with our own respective roles. FCL was a very complex reform; I began to question our project's strategy of asking teachers to prepare units as an entry point into the reform before they "tinkered" (Cuban & Tyack, 1996) with more constructivist pedagogical approaches.

Teaching the unit: Reality strikes. Jerry's unit actually began a week before it was originally scheduled. He said he was tired of waiting; the unit was not all planned, but he wanted to "jump in." Unfortunately, his cursory introduction to the unit was not at all the way he and Diane had strategized. He used the video *Hemo the Magnificent* as his anchoring event,⁴ which provided an excellent opportunity to stimulate engaging dialogue. But instead of eliciting the kinds of challenging questions that is the trademark of such events, he focused on whether students could generate open-ended questions. Not only did few students understand what an open-ended question was, none of the examples students gave represented questions interesting enough to stimulate engaging research projects.

Initially, I was surprised. He had articulated a conceptual understanding of an anchoring event in previous conversations. Yet this and subsequent lessons suggested that he did not have the practical understanding of what this

kind of event is supposed to accomplish. In hindsight, it makes sense. One of Jerry's biggest concerns was that students would not be able to generate appropriate research questions. Moreover, he had never seen a benchmark lesson in action. We were unable to gain access to project videos of benchmark lessons or to FCL classrooms, and I had no opportunity to review the process before this lesson. During our debriefing session, I held back critique of the pedagogy. I felt it was important to be supportive as he experimented with new teaching formats. He was excited with many of the students' questions but didn't know what to do with them. Together we brainstormed how to proceed.

In later conversations, we reviewed things like logistics and timelines for the unit, appropriate research questions, scaffolding for group work, developing consensus within groups, assessment, laboratories, and so forth. I often raised questions about how big this unit was becoming, but it was Jerry's wish to make it broad. For example, he expanded our initial idea of group reports, in which group members would contribute individual sections, to five-page, typed individual reports by all students. I questioned whether every student could manage such a report, but he was insistent that it was not too difficult for eighth graders. He wanted it all: research reports, concept maps, models, and laboratories—all handled within the group structure—as well as intermittent whole-class benchmarks, videos, and the like. I continued to doubt whether he could fit it all in, but I deferred to his experience. It was, after all, his classroom.

As Jerry's plans solidified, he added a fifth component to the unit that focused on factual knowledge. He had developed a 5-week grid that depicted topics each expert group was required to research each week in preparation for their jigsaw groups on Fridays. When I saw the grid, I was stunned. The topics looked like the progression of factual information that one might encounter in a textbook. Although many of the questions looked like useful research questions, it appeared that this task subverted the intent of our collaborative decision to enable all students to pursue their own research ques-

tions. How would students find the time to do all that was required given the calendar that Jerry had developed? Doing research for the weekly jigsaws would have been more than enough in most instances.

When I suggested these misgivings to Jerry, he commented that the grid represented the information that he wanted all students to learn. I noted that he could deal with some of the material during whole-group benchmarks and that students did not need to research everything themselves. But I soon backed off. My role as mentor and researcher was not to implement FCL as Brown and Campione (1996) described; rather, it was to provide support for teachers to use the principles and reinvent the model in their classrooms and to document their teacher learning as they went through the process. Given the commitment that Jerry had for both his unit and the factual information he wanted all students to learn however, I was concerned that he was setting himself up for disappointment. There simply was not enough time to accomplish all that he had intended.

Making a move. After several weeks, which included interruptions such as previously scheduled speakers and standardized testing, my fears had been realized. Although there was an interval at the beginning of the unit when some students showed interest in research and group projects, many others were lost. When we had reached the 6th week, Jerry was clearly frustrated. Too many students needed his individual help; he was unable to enact the role of facilitator as he had planned. Laboratories had failed; students demonstrated no initiative to design the labs, and their presentations lacked excitement. Research was not progressing. Some students forgot their research questions even though Jerry had met with each individual to select a question; others had spent so much time on jigsaw preparation, there was no time to work on their research. Jigsaws were not productive. "Students wrote general information instead of specifics; some students had nothing to share, since they had not helped with the research" (Jerry's final program analysis, June 1995). And finally, many students were not working on task. Jerry spent most of his time

helping individuals look for information, ignoring the socializing that continued behind his back.

With some trepidation, I decided to make an aggressive move. Jerry appeared pleased with the overture. We created a calendar with clear, short-term deadlines. We dispensed with jigsaw groups and reviewed the research questions to ensure students had broad enough topics to research easily. Jerry used all the suggestions and proceeded to develop guidelines for the final reports. Within 2 weeks, 83% of the students had turned in reports, much higher than the 60% return he had expected. Although he was quite pleased with the quality of many of the reports, particularly from some of the quieter students, he was disappointed in many others. Some students appeared to have copied information from resource materials, and he wondered whether they understood what they had written. We discussed the need for students in expert groups to share their reports with one another before going into the jigsaw groups, but it did not go well.

Kids just didn't want to share, so I suggested they read their reports to each other. I think they're tired. Some of the reports are good, but. . . . We've taken 7-8 weeks for this, and it's just too long. (informal interview, May 6, 1996)

Students also had difficulty creating concept maps of the ideas in their group. As he observed the students' boredom, he decided they were "burned out." Jerry was burned out too.

Consequently, he decided to wrap up the unit, dispense with student-generated concept maps and models, and return to his more familiar, lecture approach. If they could not do the concept maps on their own, he was going to show them how. Jerry told students to copy each map he drew on the overhead projector because two of them would be on the test. Then he developed a multiple-choice/true-false test similar to the commercially published version on the circulatory system, using some of the items students generated from their reports. He gave them the correct answers to each question (like he did for every exam review) and used similar items in a different order for the final test. Again he was disappointed when he real-

ized that students did poorer on this test than on other tests in the textbook.

After a month of reflecting on his experience and on FCL in general, Jerry decided not to continue his participation in the project into the next year. The following quote from his program analysis (June 1996) sums up his feelings:

I would suggest that FCL is not for everyone. It looks nice on paper, but has many pitfalls. It appears to have lots of flexibility. But once committed, it is extremely difficult to make changes. It requires far too many hours of preparation by the teacher . . . had I spent the same number of hours and countless weekends at school developing hands-on science labs, I truly believe I would have one of the best science programs in the state.

WHAT DID WE LEARN?

In this article, I used the case of Jerry, a highly experienced science teacher attempting to adopt a community of learners model of teaching, to examine how he experienced the learning of these practices and why his mentoring experiences did not enable him to achieve the kind of changes he had hoped to accomplish in his classroom. In this case, the mentoring around vision and a conceptual understanding around the pedagogy created conditions that far outstripped both the necessary conceptual understandings of student learning and student abilities as well as his capacity for putting into practice a range of new classroom participant structures.

If there is a small mismatch between vision and practice, then reflection on that gap can lead the teacher to persist in tinkering with his or her practice and to close the gap. But if the mentoring itself has encouraged an impossibly ambitious vision, then the gap among the vision, understanding, and practice does not motivate adaptation. It leaves a teacher enchanted with a vision but frustrated with himself or herself and the impossibility of being able to accomplish the vision in practice.

In Jerry's case, the data suggest that an emphasis on a grand vision and an elegant complex design created circumstances that are similar to those associated with rapid conversions to a new religion. Jerry thought that if he became a

constructivist, students would join him in that pursuit and the system would fall into place. But he had not thought through what the task entailed or what students would have to do to accomplish it. By the time I began to work with him, the realities of his vision stimulated by Diane were so far removed from the realities of his grasp of FCL in both principles and skills that his vision itself frequently inhibited our collaborative work. Any suggestion that he take a more modest approach, like other teachers who participated in the project, was resisted because it was not compatible with the "real FCL."

Moreover, his vision of FCL was further undermined by his conception of school science. He had not made the necessary epistemological shift from a fact-based or school conception of science to one that focuses on inquiry and constructed knowledge. This was evident in both his final assessment and his repeated attempts to encourage students to focus on facts rather than dialogic inquiry as the mode for student learning.

Frustration was the word Jerry used most frequently in his final written program analysis (June 1996) to describe his unit implementation experience. After spending countless hours preparing for the unit, he wrote that he was continually frustrated with "improper assumptions." He was surprised to discover the limitations of his students' previous research experience and the lack of interest among some students to pursue their own research questions. He was also unprepared for the general lack of student interest to prepare laboratories for the class. Frustration is also a good description about how I often felt as a project collaborator. Although wanting to support Jerry's aspirations for his unit, I anticipated his downfall and couldn't prevent it.

This case study is more than a documentation of teacher learning or a contrast of how two outsiders collaborated with a teacher to change his practice. It is also a case of the lessons we learned about conditions that support change. If we inspire development of a vision that is far beyond the reasonable capacity of a teacher to put into practice, we may hinder the process of change. Perhaps more modest visions accompanied by more modest attempts to change may

lead to more successful instantiations of constructivist principles; such was the experience of other veteran teachers in our project.

Transforming traditional practices to something as radically different as constructivist methods demands more than individual collaborations. It requires incentives—a compelling reason to change, such as the belief that students are not learning with current methods. It needs encouraging contexts and opportunities for teachers to participate in teacher learning communities that promote reflection and sustained inquiry. It needs access to concrete and observable models of teachers engaging in the new practices and/or opportunities to see instances of teachers' excitement as they tinker with new approaches. In hindsight, our reform effort was premature; we had neither real classrooms for teachers to observe nor videos that portrayed concrete examples of how teachers enacted the FCL vision. Without supportive structures such as these, we should be prepared for teachers who learn not to engage in a new practice, as in the case presented in this article, or more Mrs. Oubliers, who may think they have changed but have deluded themselves.

Finally, we must acknowledge the possibility that we as school reformers frequently overstep our legitimate prerogatives when we strive to convert teachers to a new belief system and new practices. Nel Noddings (1997) expressed this insight with great sensitivity.

Today, I am also convinced that we make a sad and deep error when we try to convert all teachers to a particular way of thinking or to a particular set of methods. Instead we should help teachers to do the best they can with their own educational philosophies and their own beliefs. . . . Engaged in dialogue, encouraged to reflect on their own practice but allowed to keep their own beliefs, teachers might well begin to revise their methods and extend their pedagogical repertoires. (p. 173)

NOTES

1. See Shulman and Shulman (2004) for a more in-depth discussion of this theoretical framework.

2. To protect confidentiality, all of the names and places in this case are pseudonyms.

3. Data for this case study include formal and informal interviews, classroom observations, notes from team meetings and a summer institute, and personal reflective writing segments.

4. The purpose of an anchoring event is threefold: (a) to develop a baseline understanding of the new information, (b) to motivate students to learn by encouraging them to ask meaningful questions, and (c) to challenge their basic assumptions.

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