

Closing the Achievement Gap Through Teacher Collaboration:

Facilitating Multiple Trajectories of Teacher Learning

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Researchers and policy makers have identified various achievement gaps in the academic progress of U.S. students based on race, class, and language. To help close such gaps, two approaches might be considered: (a) School and district leaders might increase control over teaching and curriculum, choosing a proven reform strategy and enforcing a minimum standard of instruction for all; and/or (b) school leaders might put teachers on teams aiming to build instructional capacity while trusting teachers' professional judgment to develop their own curriculum and methods of instruction. Although these two approaches are not necessarily mutually exclusive, they suggest very different roles for teachers and administrators; each approach has different advantages and disadvantages.

The first approach seems reasonable. When school or district leaders choose an approach or program that prescribes teacher behavior and is shown to have measurable impact on specific metrics and then implement that approach with fidelity, it is rea-

How should district and school leaders improve education for students traditionally underserved by public education: by increasing control over teaching and curriculum, or by empowering groups of teachers to have more collective autonomy, responsibility, and opportunities for professional learning? The second approach—promoting multiple trajectories of learning among groups of teachers—has advantages, as well as some challenges, as a means of closing various achievement gaps. Sociocultural theory informed our research, as it helped us envision how people who work together create opportunities for the adaptation and learning of new practices while increasing the likelihood that individuals internalize new skills and ways of thinking. Through the analysis of a conversation among teachers about Vickie, an English Language Learner, we examine the larger context of a school's reforms. This analysis illustrates both the possibility and desirability of helping teachers engage in multiple and evolving types of teacher learning in order to succeed with students like Vickie. Closing the achievement gap likely will require more than just choosing the right intervention and implementing it with fidelity. Conceptualizing the work of closing the achievement gap as requiring multiple, ongoing trajectories of teacher learning suggests what teachers, administrators, and district leaders can do to: foster and influence trajectories of teacher learning, promote internalization of new approaches, and sustain teachers' efforts to close the achievement gap in an "exhausting and exhilarating process that never feels finished" (Ellen, English teacher, Mountain High School, report to faculty meeting, August 21, 2003).

Summary

sonable to assume that districts can achieve similar gains to those demonstrated by research. Thus, some districts require teachers to read scripted curricula such as *Success for All* to their class. Others require teachers to follow a pacing guide while implementing approaches to reading such as *Open Court*, limiting the range of acceptable practices, specifying specific readings and exercises, and dictating where every teacher should be each day. Where schools and districts choose such prescriptive approaches, intermediate progress can be measured linearly towards a clearly defined endpoint: 100% implementation of key features or 100% compliance with key practices.

The second approach is consistent with the call of many scholars and reformers to build professional learning communities or teacher inquiry communities to help teachers take more ownership in improving their work and promoting mutual learning. Collective discussion and inquiry may be essential to help teachers perceive and respond to limitations in their own attitudes toward various groups of students and may help teachers identify and address the structural and systemic inequities built into their schools (Cochran-Smith & Lytle, 1992; Meier, 1995, 2002). Teachers traditionally have enjoyed both autonomy and isolation from their colleagues; some hope that a more organic, context-sensitive process of learning and personal investment in reform will result when teachers work more collegially to realize a shared vision. Although many have high hopes for promoting teacher collaboration and community, just what, or how, teachers learn inside such communities remains something of a black box (Little, 2002).

We begin by comparing these approaches theoretically and then turn to practice to further explore potential benefits of the second approach: an actual case of teacher collaboration that suggests the possibility, potential advantages, and pitfalls of promoting multiple and simultaneous trajectories of learning among teachers. The theory and case presented here suggest that closing the achievement gap will require more than just choosing the right intervention and implementing it with fidelity. Conceptualizing efforts to close the achievement gap as requir-

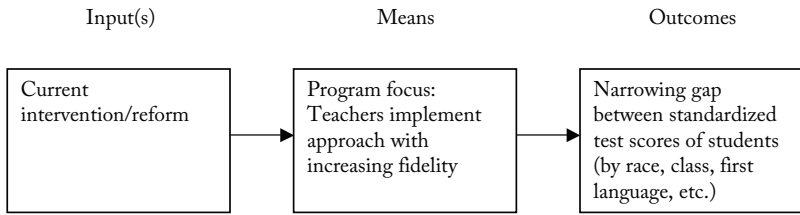


Figure 1. Conceptualizing closing the achievement gap as implementing a program or intervention with fidelity.

ing multiple, ongoing trajectories of individual and group development brings the centrality and desirability of teacher learning into focus, illuminating what goes on within the black box of teacher community and suggesting specific roles for school and district leaders supporting such reform.

Theoretical Framework

Conceptualizing Pathways to Schoolwide Reform Addressing the Achievement Gap

One reasonable approach to closing the achievement gap includes identifying practices or interventions that have a research base showing positive effects on student learning and then prescribing exact or reasonable reproduction of these interventions. In this approach, measuring intermediate progress toward closing the achievement gap often comprises measuring fidelity of implementation; that is, the degree to which teachers are adopting—or complying with—the behaviors or instructional features specified by the reform. Approaches proven effective elsewhere and faithfully recreated in a new setting have promise for improving education. The logic of prescriptive approaches, represented in the three connected boxes in Figure 1, requires teachers to be technicians implementing a specific approach.

In an era where No Child Left Behind (2001) and state legislation require school systems to seek improvement in measurable

outcomes, the logic and the appeal of this approach are obvious. Top-down mandated reforms also can range in the degree to which they allow teacher discretion, discussion, and adaptation. To the extent that such approaches prescribe or control what teachers do; however, they have several potential disadvantages. First, if support or incentives to continue implementing disappear, and teachers have not engaged in learning that leads them to value the approach, continued use of the reform seems unlikely. Seminal histories of school reform suggests that many waves of reform have come and gone without leaving significant impact on the practices of participating teachers (e.g., Cuban, 1993; Tyack & Cuban, 1995). As principals and superintendents leave, grant funding ends, or buzzwords *du jour* change, teachers are left as the one constant in schools. Teachers may become jaded as waves of reform come and go, yet the greatest hope for impact may lie in waves of reforms leaving teachers with more ambitious aims and with tools or approaches to realize these aims (Tyack & Cuban, 1995). Prescriptive reforms that reduce teachers to technicians are not likely to facilitate teachers' understanding of their work or their ability to adapt it to new circumstances or specific students. Such approaches seem less likely to help teachers internalize new values or new practices that they might later use on their own.

A second risk of this approach is that it is inherently bureaucratic, reducing teachers to cogs in a machine in ways likely to inhibit learning. Some suggest that when promoting learning—among students or teachers—better results might be attained if teachers view learners as “real, conscious, intentional, responsible human beings” (Olson, 2003, p. 144). This depiction of learners contrasts with the bureaucratic role of the teacher as technician instructed to implement curriculum or approaches chosen by a school or district. In the latter case, teachers fill roles that deny or ignore individual consciousness, limit individual teachers' ability to act on intentions, and move responsibility from individuals to bureaucratic decisions and structures; they thus ignore the very qualities that probably must be activated for real learning to occur (Olsen, 2003).

A third risk is that prescriptive, bureaucratic approaches will drive talented and thoughtful teachers out of specific schools or the entire profession. This article's authors, both teacher educators, have the opportunity to work with urban districts that tightly mandated teachers' approaches to teaching reading. Such districts lament the fact that our preservice teachers do not choose to teach in their schools. Our preservice teachers, however, prefer to work where they can use their skills more creatively. The district is standardizing aspects of teachers' work to improve reading instruction for all; however, their prescriptive approach may be driving away the highly qualified teachers whose energy and recent training would help the district's efforts to close the achievement gap. A larger study of teacher induction similarly found that although novice educators welcome curricular guidance, they dislike being told what and how to teach (Johnson & The Project on the Next Generation of Teachers, 2004). A final problem is that some approaches shown to improve standardized testing may have no—or negative—effect on other outcomes valued by districts, teachers, parents, or students, such as the development of critical thinking, curiosity, or desire for continued learning.

A second way of conceptualizing the work of closing the achievement gap draws on sociocultural theory to highlight how teachers' knowledge and skills might be developed collaboratively. When focusing on teacher learning rather than, or in concert with, program implementation, one can envision how new interventions and reform could come together with teachers' prior learning and experience to help achieve goals valued by the reform and by teachers themselves.

Conceptualizing Learning in the Black Box of Teacher Community

This article seeks to illuminate the nature of the learning that might happen among a group of teachers (i.e., the highlighted box in Figure 2). Meeting the needs of traditionally underserved students likely will require teachers to learn new teaching prac-

tices, and it may require teachers to adopt new roles with students and families. To conceptualize how such learning could happen through collaboration, one could envision teachers as working in communities of practice, whether they interact on grade-level teams, in departments, or in whole faculty meetings. Communities of practice form when individuals are engaged in a common enterprise working toward shared outcomes (Wenger, 1998). They can be organized in ways that either promote or hinder individuals' opportunities to see others' practices, talk together about what they are doing and why they do it that way, and learn new practices from observing others and beginning to participate in the practices themselves (Lave & Wenger, 1991; Wenger, 1998). The bottom boxes in Figure 2 suggest a potential advantage to this approach. Prescriptive approaches locate power in the decision of which reform to adopt and leave little room to adjust the means to suit multiple outcomes. When local teacher groups retain some power to choose or adapt approaches, the capacity that resides in individuals and among a community of teachers can be shared and applied more flexibly in ways that could ultimately both improve test scores and address locally valued goals not measured by standardized tests.

To make sense of how individuals and groups learn, we borrow the notion of trajectories of learning from sociocultural theory. Wenger (1998) notes that trajectory does not imply a fixed course or destination, "but continuous motion—one that has momentum of its own in addition to a field of influences. It has a coherence through time that connects the past, the present, and the future" (p. 154). Where fidelity of implementation charts progress toward a clear endpoint or set of specific features, trajectories of learning suggest movement in directions that cannot be predicted, but that follow from teachers' interactions with their students, curriculum, colleagues, professional development support, and the support or mandates of school and district leaders. The direction and nature of what teachers learn may evolve gradually or show sudden changes in direction based on external circumstances and influences.

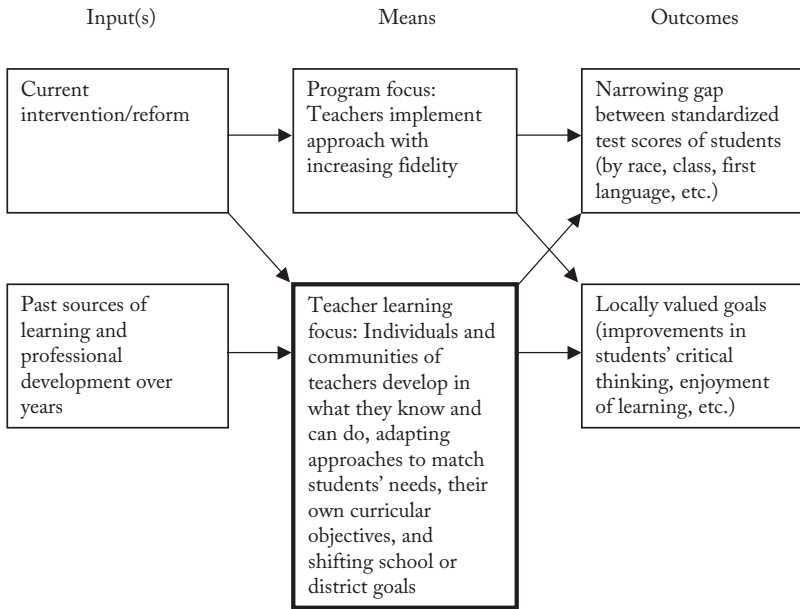


Figure 2. Conceptualizing a different—or complimentary—pathway to closing the achievement gap through promoting teacher learning.

The question remains whether working in groups might lead teachers to *internalize* new approaches, that is, to both master and value new practices and ways of thinking regardless of external incentives or penalties, as well as how might this learning happen. Vygotsky's (1978) notion of the zone of proximal development offers a basic insight regarding how internalization occurs. First, individuals can master new skills, practices, or ways of thinking with the support of skilled teachers and through engagement with peers. Eventually, operations one can do only with the help of other people or material supports become internalized (Vygotsky, 1978); a girl can tie her shoes on her own, a student can use the subjunctive tense in a foreign language without needing the worksheet as a prompt, or a pre-service teacher can practice backward design of curriculum in his or her individual work as instructors rather than through units

designed by small groups with a professor's feedback. If the aim is to help individual teachers internalize new approaches so that they understand, value, and can adapt such practices, Vygotsky's explanation of how external operations are internalized suggests the importance of creating spaces for teachers to talk and engage in practices together rather than seeking to control individuals and deprive them of opportunities to question or alter practices. Teachers who are engaged in joint experimentation, inquiry, and discussion with regard to new approaches seem more likely to eventually internalize the approach, that is, to understand it and be able to use it even if external supports disappear. Added to Vygotsky's notion is our belief that teachers who are engaged in such joint meaning-making and shared practice are more likely to value such shared practices and to invest greater energy in developing and sustaining them.

Methods

Individual teachers can, and perhaps must, be engaged in multiple trajectories of learning in order to better meet the needs of many different kinds of students traditionally underserved by public education. To suggest both the possibility and desirability of multiple trajectories of learning, we share a case drawn from a larger comparative case study of teacher collaboration in two high schools. The larger study comprised observation of two teams of teachers—each at a different school—collaborating over the course of 2 years. Data from the larger study also included more than 120 hours of classroom observations of 6 of the participating teachers; field notes focused on patterns of classroom practice to allow subsequent analysis of continuity and change over time. Study data also included interviews with participants and interviews with administrators, colleagues, or support staff who could provide additional perspective on the process of collaboration and its impact on teachers' work with students. We have become familiar with these data through multiple reading of notes and transcripts, ongoing memo writing and coding (Glaser, 1969;

Taylor & Bogdan, 1998), and developing matrices to see change over time in classroom practice (Huberman & Miles, 1994). Our initial analyses included bottom-up coding—allowing themes to emerge from data—and top-down coding, driven by research questions that led us to attend to whether and how teachers publicly share their own practice, critique others, and engage in other kinds of discussion likely to influence classroom practice.

The conversation and the other data shared in this article were selected from this larger data set for their potential to illuminate the notion of trajectories of teacher learning as a means of meeting the needs of underserved students. The authors identified various ways in which teachers seemed to be growing in the case and then looked across three relevant bodies of existing research to help frame ideal practices. Comparing what teachers were saying and doing at this one site with larger descriptions of the desirable practices allows us to suggest trajectories of desirable learning that have occurred and to consider how these trajectories might be influenced to head in additional desirable directions.

A Case of Teachers Collaborating to Close the Achievement Gap

This case could be read as a self-contained unit. Readers might put themselves in the role of an administrator, curriculum coordinator, or school district leader, and ask three questions: (a) What have these teachers already accomplished? (b) What additional progress might they make in their work? and (c) What kinds of support could help these teachers continue growing in what they can do individually and as a group? After sharing the context and the conversation, we viewed these teachers' work through several different lenses to suggest our answers to the question of what these teachers are accomplishing and how their work with students might continue developing. We then step back from these analyses to argue for the desirability of viewing work to close the achievement gap in terms of supporting multiple, ongoing trajectories of teacher learning.

It's another sunny, dry, 70-degree late-September afternoon in Pleasantville, a suburban community in California. At Mountain High School, just outside Room E-6, students are scurrying to get to class. Others linger to talk with each other in English, Spanish, or Chinese. Inside E-6, Betty, Hank, Alice, and Elaine are sitting in a circle of student desks, noshing on hummus as they begin their regular 90-minute meeting to discuss their newly shared students and the new advisory class they are teaching as part of "Shasta House."

Much history has led to these teachers being able to share students and time working together. For 14 years, teachers experimented with team-taught courses, senior exhibitions, and project-based learning. Staff members became frustrated as their piecemeal efforts to improve education within traditional school structures exhausted them without significantly impacting their Latino and African American students' record of academic underperformance. Driven by a central aim to "help all students succeed," according to the principal, the staff agreed to a plan for converting the school into smaller learning communities, including a number of practices recommended in school reform literature. All teachers in each new house, or small learning community, would:

- *Share a limited number of students (80)*, with the intent that teachers would know their own students well and be able to talk to colleagues about shared students.
- *Serve as advisors* to 20 of their newly shared students. Advisors would meet twice a week in a special class for advisees, would monitor their advisees' academic progress, and would coach individuals, supporting their academic and personal growth.
- *Contact families regularly*. Advisors would serve as a liaison between families and the wider school, establishing a regular flow of information between home and school.
- *Collaborate with colleagues regularly*. Teachers would teach one less class each day to have time to collaborate regarding their teaching and their shared students.

- *Focus on English Language Learners (ELLs)*. The school's ELLs would be shared between this house and one other; the remaining two houses would share special education students, with the exception of some who are also ELLs.

Thus, in 2003, Betty, Hank, Elaine, and Alice gave up a fair portion of their summer to devise common expectations and policies and to rework some curriculum for the first 80 freshman who would come into Shasta House. In late September—only one month into their work as a team—these teachers are still determining how to make their new arrangements work for their own and their students' benefit; however, a glimpse of their conversation suggests that the ongoing reform at this school is already paying some dividends. The excerpt of conversation below, recreated from field notes, occurred after several minutes of informal discussion about other students and situations.

Ben (third year, biology): I'm meeting with Vickie Seanez's mother this week. Does anybody have anything for me to pass on other than the fact that she is not doing work for us?

Hank (20th year, history): Today, she didn't even bring sheets or a textbook. It's a wall; I can't tell how much is language ability and how much is her decision not to try.

Ben: I'm not sure what I'm going to say. I asked about gang affiliation; a friend said, "No, she's not in one."

Hank: It's almost like if we force her, she'll do it. When she sat at lunch with me, she did part of the work because it was very accessible. The worksheets are better for English Language Learners. Part of this is just sitting her down, because the textbook is so hard.

Ellen (ninth year, English): I'm thinking of having a lunch for our ELL students to talk about our reading—

Hank: —and maybe we need to have them do less reading—

Ellen: What about tests? Should we make two, a separate one for ELLs?

Ben: For me, the problem is usually vocabulary that they don't know.

Hank: I read through a paragraph with Taolin (a native Mandarin-Chinese speaking student), and there were 10 words he didn't know. . . . I tried putting all the ELLs together in a group, and they worked really well together. Rodrigo felt empowered, and Julian and Rudy felt comfortable.

Ellen: That's interesting. Also, we had a very clear worksheet, a graphic organizer, in English to make sense of the plot of today's story; it was definitely much friendlier. What if we work out a plan with Vickie's mom regarding homework? Mom should be sure that Vickie has a quiet place to read, that she brings home her planner with written assignments in each class, and mom could check to see that Vickie has finished the assignments.

Hank: She also needs one-on-one tutoring, someone to help her figure out how to work with a textbook.

Alice (eighth year, algebra): How about her big brother?

Hank: Or, maybe we get one of the sherpas (upper class volunteer tutors) to work with her during advisory (class).

[Ben takes lots of notes regarding these suggestions.]

Ben: Alright. I'll work out a plan with the mom for homework and a quiet place to study, and look into the rest of this. I still wish I had more to say to Vickie's mom about how we're going to help her daughter succeed here.

Hank: It's good for you also to just be there, to listen to the mother, hear what she's thinking about.

What are these teachers doing together that might close the achievement gap? What more could they do?

A First Trajectory of Learning: Collaboration

In most schools, norms of teacher privacy and noninterference limit the potential for collaboration to actually improve teaching and learning. Research over the decades has suggested that teachers generally avoid seeking opportunities to share or communicate in ways that impose on other teachers; teachers value autonomy more than the chance to influence others' work (Little, 1990; Lortie, 1975; McLaughlin & Talbert, 2001).

Asking for help can be difficult in a culture that values autonomy; similarly, teachers may not be comfortable offering suggestions to other teachers or sharing their own practice publicly.

In contrast to typical school cultures, Ben seems to invite help regarding what he will say and do with Vickie's mom when he states, "I'm not sure what I'm going to say" (line 6). In lines 8–15 and 18–29, Hank and Ellen publicly share their own approaches, methods that Ben could also try, including a "clear worksheet, a graphic organizer," ELLs working together in class, a special lunch meeting of ELLs, peer tutoring, and a role for Vicki's mom. These teachers were already at a point where they were willing to ask for and provide each other with assistance, a process also observed at other times (observations, team meetings, August 25, 2003, August 26, 2003, August 28, 2003, September 8, 2003, and September 23, 2003). Hank and Ellen had already been collaborating for years; in interviews, 3 of the 4 participants expressed their belief that Hank and Ellen's comfort and experience collaborating fast forwarded the group's ability to work together constructively. Hank also noted the "cult of collaboration" (observation, faculty meeting, August 21, 2003; personal interview, May 3, 2003) that developed at the school over years of team-teaching, suggesting that many in the school already had begun trajectories of learning around how to work effectively and constructively with peers.

In the conversation captured in the transcript, teachers did not question or critique peers' work (observation, team meeting, August 23, 2003). In fact, we cannot find an instance of a teacher challenging or questioning a colleague's instructional practices either in our memory of their work or in our reading across field notes or transcripts from the 24 meetings of this group that we observed. In other words, these teachers rarely broke traditional norms of privacy and noninterference. When Hank proposes putting ELLs together in a group (line 19), Ellen finds that "interesting." No one engages Hank's musing that "maybe we need to have them do less reading" (line 14) or answers Ellen's question of whether there should be separate tests for ELLs (line 15), questions that would have steered their conversation into potential

disagreement; these suggestions comprise lowering standards, and could have been provocative invitations to a deeper discussion about teaching ELLs (observation, team meeting, September 23, 2003). Alicia also only participates once; as the year progressed, she overcame her self-described discomfort to become a more consistent contributor (personal interview, Alicia, September 12, 2003, December 15, 2003, and May 7, 2004).

In this specific conversation and others in our data set, requests for help occurred around specific students or parents; teachers did not use this particular forum as a site for seeking help with core instructional challenges (observation, team meeting, September 23, 2003). If district or school leaders wanted to influence the trajectory of learning with regard to how teachers engage in collaborative work, leaders could work with them to devise a means of identifying the impact of their individual and group efforts with individual students. In addition, leaders could provide training in protocol-usage to help teachers feel safe in giving and receiving critique, especially around core issues of instruction (e.g., McDonald, Mohr, Dichter, & McDonald, 2003).

A Second Trajectory of Learning: Promoting School–Family Partnership

Seeing the work of these teachers through the lens of school–family partnerships offers another way to consider how these teachers might close the achievement gap. The U.S. Department of Education (1995) has concluded that “thirty years of research make it clear: parents and families are pivotal to children’s learning” (p. 19). Parent involvement improves students’ academic achievement and lowers students’ dropout rates regardless of racial, cultural, or socioeconomic background (Flaxman & Inger, 1991). Secondary teachers, however, generally see their role as subject-area specialists responsible for contacting parents only if there are problems in their specific class, rather than as resources aiming to engage and partner with families (Epstein, 2001).

The conversation about how to work with Vickie’s mom, and similar discussions among this group, suggest that these

teachers are trying to learn how to engage families in a new way (observation, team meetings, August 25, 2003, August 26, 2003, August 28, 2003, September 9, 2003, September 23, 2003, October 7, 2003, October 21, 2003, November 25, 2003, February 3, 2004, February 10, 2004, March 9, 2004, March 16, 2004, and April 27, 2004). In an interview, Ben explained that “in previous years” he contacted parents “only when grade time is coming around and I wanted to make sure that I was covering myself,” but now he was contacting them “more often for the good and the bad” (personal interview, March 25, 2004). The other teachers also indicated improvements in the quantity of their contact with parents (personal interview, Ellen, May 6, 2004; personal interview, Alicia, January 30, 2004; personal interview, Hank, June 24, 2004). As they accept new roles, these teachers already appear to desire contact with parents and have emerging ideas about how to do such work, suggesting positive movement, or a trajectory of learning, when compared with traditional high school teachers.

Researchers have urged that teachers know and build on existing forms of parental involvement and identify forms of cultural and intellectual capital residing in culturally diverse families (Gonzalez, Moll, & Amanti, 2005; Valdés, 1996). There is no evidence in the conversation that Ben or these other teachers are thinking in these terms (observation, team meeting, September 23, 2003). If school or district leaders wanted to influence the trajectory of teacher learning to move in this direction, they could sponsor home visits supplemented by reading and activities that would help teachers enter homes and communities different from their own, while seeking to identify strengths rather than reinforcing any unconscious sense of cultural deficit (e.g., Gonzalez et al., 2005). These teachers’ trajectory of learning also might be shaped in other directions by reading the work of teachers and researchers who are thinking through issues of cross-cultural school–family partnership (e.g., Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001).

A Third Trajectory of Learning: Instructional Modifications for ELLs

A brief, final illustration of trajectories suggests how trajectories may be more incipient and unsupported, or could even be miseducative, that is, lead to negative learning. One also could consider the trajectory of learning among these teachers in terms of the adaptations they make for ELLs. We know from research that there are multiple strategies teachers can use that help give ELLs access to challenging content and academic skills while building their language ability so that they do not fall behind peers in what they know and can do: Encouraging multiple means for students to express their thoughts, progress checks on previous understanding, graphics and visuals in conjunction with English text to convey key concepts, and live demonstrations are all examples of approaches that accomplish these goals (Echevarria & Graves, 2003; Téllez & Waxman, 2006). This brief glimpse of 4 teachers' work suggests that at least some of them are already aware of the potential for a "graphic organizer" to help scaffold or structure ELLs' thinking and learning (line 21).

The proposals for making a separate test or providing less reading sound like they comprise lowering of standards for the content and skills students can learn and would ultimately widen the achievement gap if others learn from or adopt them. School or district personnel might support teachers' trajectory of learning in this area by providing reading on sheltered instruction, approaches that help ELLs gain access to rich content while building ELLs' academic English. Looking across 24 meetings of this group in the 2003–2004 school year, we do not find these teachers thinking or talking about strategies to build academic vocabulary in ways that would likely help ELLs and others (observation, team meetings, from August 25, 2003 through May 25, 2004).

Thinking in terms of this third trajectory of learning suggests the need for teachers to engage in *multiple* trajectories: Failing to address one critical area, such as refining these teachers' work with ELLs, could limit the effectiveness of other efforts to close the achievement gap.

Discussion

This article uses a conversation, and description of the larger context of that conversation, to suggest how a group of teachers can engage in multiple trajectories of development which promise to improve their work with traditionally underserved students. There are at least three ways to initiate or sustain a trajectory of learning in a positive direction. First, school and district leaders can provide teachers with time, training, and structures for identifying the tensions and challenges in their work to spur new lines of inquiry and experimentation (Cochran-Smith & Lytle, 1992). Second, a new reform or intervention also can push teacher learning. In Shasta House, teachers' adoption of new roles vis-à-vis individual students and families raised new questions for teachers who had previously focused on teaching subject matter: What could Ben do with Vickie's mother that might help Vickie? Why wasn't Vickie succeeding? When school and district leaders provide teachers with time, training, and supportive structures, authentic questions and tensions emerging from teachers' work provide one source of energy to push a trajectory of learning. A final factor in initiating and sustaining this teacher group's trajectories of learning comprised a history of reform and collegial discussion at the larger high school. An emerging and shared concern for closing the achievement gap both unified and informed some of the directions of learning that the group undertook, leading to the new attention to connecting with families or thinking about ELLs.

Trajectories, in physics or teacher learning, may be subtly or forcibly altered by outside forces. Thus, the metaphor of multiple trajectories of learning suggests a third source of energy and direction for trajectories of learning: school and district leaders. Ideally, leaders should track and participate in such learning. Left on their own, there is no guarantee that teachers' trajectories of learning will lead them to uncomfortable, yet productive, practices of collaborative work, such as critiquing colleagues' instruction, or to pushing each other on difficult issues such as how best to meet the needs of ELLs or language minority par-

ents. Where leaders are in touch with teachers' ongoing thinking and development, leaders can prod learning in new directions by providing their own feedback, naming elephants in the room, or raising questions and perspectives teachers might miss. Finally, school leaders can influence developmental trajectories by providing access to external sources of learning, such as readings, experts, observations of model programs, and other professional development experiences.

We have framed this case of teachers working together in a larger conceptualization of how schools might work to close the achievement gap. Some hope that closing the achievement gap will be a matter of finding the right intervention and implementing it with fidelity. Specific interventions can and do have measurable impact on a percentage of students; in an era of increasing accountability to standardized testing, schools and districts must attend to the most measurable outcomes of education. Interventions may be undertaken in ways that either foster or prevent teachers' collegial learning, with implications for what teachers internalize: that is, what they know and can do on their own after support for a specific intervention fades.

This single case study illuminates problems as well as possibilities of teacher learning inside the black box of teacher collaboration. A single case does not allow one to make claims regarding how generalizable findings will be in other settings, but does allow one to hypothesize about phenomena (Yin, 1994). This particular case suggests several challenges as well as advantages where superintendents, curriculum coordinators, and principals seek to enable and influence multiple trajectories of learning. Without a shared vision or set of objectives, the various trajectories of learning that occur may have little synergy or coherence and thus, may not have a powerful positive impact on teaching and learning. Groups will need time and support to develop a personal yet shared commitment to new goals. Groups also will need time and support to develop the capacity and trust necessary for collaborative work and reflection. Simply putting teachers in a room together will not necessarily produce generative conversations.

Collaboration can both require and build trust, routines, and skill for further collaboration (Young, 2007). This process might best be viewed as requiring years and unfolding while undertaking other interventions and reforms in ways that engage teacher groups. Groups also may need training or structures to help them engage thorny issues of teaching and learning, tackle entrenched beliefs about certain groups of students, and critique each other's practice (McDonald et al., 2003; Meier, 2002).

Finally, thinking in terms of trajectories does not allow the comfort of a clear endpoint—a moment when a school can declare victory or rest—and suggests the need for ongoing and evolving learning. The English teacher in Shasta House captured the ongoing nature of this work to close the achievement gap when she described her house's efforts as this “exhausting and exhilarating process that never feels finished” (observation, faculty meeting, Ellen, August 21, 2003). Some have presented teacher collaboration and teacher community as “a fairly straightforward, well-established way to appreciably improve both teaching quality and levels of learning,” which can “make an immediate difference in achievement, while requiring only reasonable amounts of time and resources” (Schmoker as cited in DuFour, Eaker, & DuFour, 2005, p. xi). Little (2002) observed expanding claims regarding teacher collaboration; we do not mean to reinforce overly optimistic assessments of teacher community as a simple or quick means to improving the teaching and learning of traditionally underserved students. In spite of the subtlety and complexity of empowering learning among groups of teachers, however, the commitment and energy unleashed among Shasta House teachers suggests the ultimate payoff. Teachers at the school spoke about their first year of work with colleagues in terms that revealed the significant sacrifices they willingly made to enable their new structures to work and to improve the success of all students.

The causes of the achievement gap are multiple and complex. In response, schools could help teachers engage in multiple and complex types of learning. Some schools try an alternative approach—enforcing curriculum and instruction on individual teachers from above—without allowing room for teacher

discussion and adaptation. This approach may result in more immediately measurable results while preventing teachers from differentiating or responding flexibly to specific students, subject matter, and contexts. This approach may drive out the most thoughtful and creative professionals and prevent teachers from learning from, or valuing, new approaches. In the U.S., school reforms come and go like fads (Tyack & Cuban, 1995); ideally, each wave would leave teachers with deeper understanding of the specific affordances and limits of a new approach, with newly internalized ways of thinking and acting, and with the personal investment necessary to sustain or adapt a new approach appropriately, with or without school and district mandates. With sufficient time and support, groups of teachers engaging in multiple trajectories of learning can build the kinds of capacity and commitment necessary to help Vickie, and many like her, realize their potential in our schools.

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