

The Reciprocal Influence of Teacher Learning, Teaching Practice, School Restructuring, and Student Learning Outcomes

JACQUELINE ANCESS

Teachers College, Columbia University

This article discusses the reciprocal and dynamic relationship of teacher learning, teaching practice, school restructuring, and student outcomes in three high performing public secondary schools for at-risk students. Student outcomes include improvement in student graduation rates, course pass rates, college admission rates, and academic course-taking rates. The article describes each school's context and the inquiry process that stimulated teacher learning; triggered changes in teaching practice, school organization, and student outcomes; expanded teacher learning; and extended improved outcomes to a wider population of students. It describes how the interaction of these variables produced practitioner knowledge that teachers used to the benefit of student outcomes. It discusses how in each of the three schools teachers' learning was initially driven by their aspirations for specific student effects, which led them to develop and implement practices that drew on their school's culture, and their knowledge of their students, successful practice, and their content area. In each case teachers made changes in their teaching practice and in school and curricular organization. The article also identifies a set of contextual conditions that support this change process. Lastly, the article presents implications for researchers, reformers, and practitioners who aim to improve student outcomes by changing teacher practice and school organization. The article is based on findings from a five-year multiple-case study of how three high schools connect disenfranchised students to their future.

INTRODUCTION

The improvement of schools and raising student achievement are enduring challenges because they are confounding problems. Frequently we search for blanket remedies that promise protection from the complexities of schooling and often are seduced by elixirs that over time reveal themselves, sadly, to be little more than snake-oil solutions. Unfortunately, when these silver bullets fail to hit their mark, they contribute to a pattern of reform *du*

jour, which undermines practitioner commitment to serious reform (reform *serieux*) by engendering cynicism and encouraging practitioners to make specious adaptations. The beliefs that elicited the unsatisfactory practices remain untouched as does the culture that sanctioned them. The more things change, the more they stay the same.

School restructuring is now in just such a trajectory as researchers such as Elmore (1995, 1996), Peterson, McCarthy, and Elmore (1966), and Newmann and Associates (1996) record its limits as a lever for high quality student or teacher or school performance. As Peterson, McCarthy, and Elmore (1996) found, restructuring by itself does not change student learning or teacher practice, even though, as Elmore has pointed out, "Most school reformers and practitioners take for granted that changes in structure produce change in teaching practice, which in turn produce changes in student learning" (1995, p. 23). Although this linear trajectory turns out not to exist, and although restructuring by itself does not produce changes in teacher learning and practice and student outcomes, we still must be mindful of the insights of Sarason (1982) and Fullan (1982) on the importance of school organization in the change process. As Fullan instructs us, the challenge rests in restructuring schools so that innovation and improvement are integral to the dailiness, the lived lives of teachers in schools (1991). In other words, restructuring needs to be connected to teacher learning and practice in order to have an effect on student learning. It needs to be an ongoing, ever-evolving process rather than a singular event with a beginning, middle and most importantly, an end.

This paper looks at restructuring as such a process and looks at it in its connection to teacher learning, teacher practice, and student outcomes through the cases of three schools that aim to achieve clearly stated academic and social goals. Specifically, this paper will present findings from a five-year study of three high schools that successfully educate vulnerable youth. It will illuminate (1) the nature of the teacher learning and the changes in teaching practice; (2) the nature of the restructuring; (3) the student benefits; (4) the nature of the relationship among teacher learning, teaching practice, school restructuring, and student benefits; and (5) the implications for researchers, reformers, and practitioners interested in school change.

The Dilemmas of a Complicated Relationship

Unfolding the relationship among restructuring, teacher learning, teaching practice, and student outcomes is complicated for several reasons. As numerous researchers (Elmore & Associates, 1990; Murphy, 1991; Peterson et al., 1996; Tyack, 1990) have explained, restructuring has different meanings for different folks. Restructuring can occur individually or in any combination in a number of realms: school organization, pedagogy, curriculum, student

admissions and placement, school governance, and teacher roles and relationships. Therefore, it can have multiple meanings. Couple this variety with the internal vastness of each these realms and the complexity of examining the nature of the relationship among restructuring, teacher learning, practice and student outcomes—not to mention untangling and unpacking their connections—becomes formidably complex.

Therefore, it is not surprising that a number of researchers have described the relationship of restructuring, teacher learning, teacher practice, and student outcomes as elusive or ambiguous (Elmore, 1995; Fullan, 1982; Newmann & Associates, 1996; Peterson et al., 1996). When some researchers were able to find a strong correspondence between the degree of organizational and pedagogical restructuring, reformed teacher practice, and improved student learning outcomes (Newmann & Associates, 1996), they were unable, as Newmann and colleagues (1996) explain, to describe and analyze the nature of the relationship between teacher learning, teacher practice, and school restructuring because the schools in their study were already restructured at the time the research was conducted.

Where researchers have explored this relationship, they have come up with what at first appear to be conflicting findings: Elmore (1995) finds that good practice does not flow from restructuring, that is, organizational changes, but rather the reverse. On the other hand, Lee, Smith, and Croninger (1995) find that good practice and improved student outcomes do flow from changes in structure such as small school size and personalization. However, because these studies use different types of outcomes to measure student learning and because those outcomes may require different instructional strategies, demanding different kinds of teacher learning, both conclusions can be correct. In the Elmore study, the student learning outcomes were determined by the teachers' values and the goals of the writing program they were implementing. In the Lee, Smith, and Croninger study, student learning was assessed by scores on standardized tests. As the different conclusions of these studies reveal, when there are differences in what learning means across particular settings, the task of understanding the relationship among restructuring, teacher learning and practice, and student outcomes becomes more complicated.

The study under discussion conceptualizes teacher learning and school restructuring as functions of *particular* learning and achievement expectations for students because in the researcher's observations of the schools at work they emerge that way. In the study schools teacher learning and school restructuring do not exist separately, outside the function of each school's *particular* instructional mission. Although teacher learning in this study involves experimentation, discovery, and application of new knowledge and skills, the teachers are generating knowledge rather than reproducing it, in contrast to externally imported professional development packages, where reproduction of knowledge is more typical. Those apply-

ing the new pedagogy and structure are its inventors and their fidelity is more to the function of the innovation rather than to its form. The new knowledge emerges from the teachers' practitioner databases, which are syntheses of their professional experience and intuitive knowledge, along with their observations of students' performance on particular tasks, and their interpretations of students' performance, that is, student feedback, in a context that the teachers have problematized.

Specifically, restructuring for the schools in this study means the adaptation of their organizational and pedagogical structures to align with learning needs of students in context so that students can achieve particular learning goals. Each of the schools could be characterized as "restructured" because, in different ways, they have eschewed the typical bureaucratic organizational high school model and adopted the communitarian organization model as it has been described by Lee, Bryk, and Smith (1993), Lee and Smith (1994), Lee, Smith, and Croninger (1995), and Newmann and Wehlage (1995). The communitarian school model stands in contrast to the bureaucratic school model in terms of values, organization, and pedagogy. It features: a democratic governance structure; the systematic and systemic use of relationships as the venue for conducting school business; personalization and small size or strategies for human scale; respect and provision for diversity; heterogeneous grouping; multiple opportunities for student engagement with rich and challenging curricula; student assessments that help teachers hold themselves accountable and inform teaching and learning; authoritative and skilled leadership focused on implementing the school vision; professional communities characterized by a culture of shared beliefs in which the norms of practice are rooted; regular opportunities for collaboration, cooperation, reflection, debate, and self-correction, and teacher assumption of collective responsibility for the whole child as well as his or her learning and success; and high levels of teacher optimism and sense of self-efficacy coupled with high levels of school or team autonomy. Each school's operationalized model reflects its understanding of these principles and its capacity to enact them.

In this study, student learning includes a combination of school-determined and externally developed outcomes. The school-determined outcomes include: (1) completion of tasks and courses and (2) achievement of specific school-determined competencies such as critical thinking. Externally determined outcomes include: (1) attendance rates, (2) graduation rates, (3) college admission rates, and 4) standardized test scores.

METHOD

The findings presented here come from a study in which I used a qualitative approach in the form of three descriptive case studies and a cross-case analysis of three high schools that strive to have high levels of student

affiliation and intellectual development for racially, ethnically, and academically diverse, disenfranchised students. Students were considered to be disenfranchised if they evidenced two or more of the following characteristics: (1) a poor academic record; (2) racial, ethnic, or language minority; and (3) working-class or low socioeconomic status. The study sought to find out how these high schools connect disenfranchised students to their future and focused on faculty and student roles and relationships and the organization of students, the instructional program, curriculum plans, and teaching and learning.

Participants

The three high schools in the study are the Urban Academy, International High School, and Hodgson Vocational Technical High School. The Urban Academy is a New York City “second chance” school for 100 racially, ethnically, socioeconomically, and academically diverse students who have failed or dropped out of other high schools. Seventy percent are African American and Latino and 30% are white and other; 75% are poor and 25% range from working-class to affluent.

International High School, located in Queens, New York, serves 450 recent immigrant students who, coming from 54 countries and speaking 39 languages, are new English language learners and identified as being at risk of failure in a large high school by their junior high school guidance counselors. Forty percent are Latino, 30% are Asian, 22% are Eastern European, and 3% are Black; 75% qualify for free or reduced lunch. For many International students, immigration to the United States means the hardship of leaving behind family members—sometimes parents and siblings—and relocating at a vulnerable time in their development. In many instances students reside with relatives they barely know and are lonely for the familiarity of their home.

Hodgson Vocational Technical High School, in suburban Delaware, serves 900 students who are 70% white, 30% minority (predominantly African American), and almost all working class. They are described by the faculty as antipathetic toward academics and lacking confidence in their capacity for intellectual achievement. According to their teachers, most of the students have chosen a vocational school to avoid the pain of their former academic experiences, although most of the faculty asserted that the problem was more in the ways in which students had been taught than in their intellectual capacity.

In all three schools faculty play a prominent role in hiring staff, and they are able to hire teachers whose educational vision and practice are compatible with the mission of the school and refuse positions to teachers who are not a match with their educational vision and pedagogical orientation. While this hiring practice narrows differences among staff, it by no means

eliminates them. Nor is resistance eliminated—although undermining resistance to reform is unlikely to occur. Instead, vigorous debate is commonplace.

The schools were selected because of (1) their track record of success with racially, ethnically, socioeconomically, and academically diverse disenfranchised students; (2) their faculty and administration's belief that a successful education provides students with meaningful possibilities for their future and an intention to organize the school experience to this end; and (3) their belief that schools must provide students with a combination of nurture and rigor, or affiliation and intellectual development, in order to offer students a future of meaningful possibilities. Success in this study refers to high graduation rates and postsecondary school admission rates that exceed those of comparable schools.

Interviews

I conducted semi-structured individual and small group interviews with a total of 66 faculty members including teachers and the principal and administrators of each school. Interviewed faculty members had been identified by their principal or other faculty for being interested in the study, and for representing different curriculum areas, programs, or organizational positions. I conducted these interviews in order to illuminate each faculty member's views on their school's policies and practices for promoting social and intellectual affiliation and development. I developed a protocol for faculty interviews with questions that focused on how the school connects students to its social and intellectual goals, the issues and dilemmas that relate to this effort, aspects of school organization that support teachers' efforts, and how teachers know if they and the school are achieving these goals.

I conducted semi-structured and informal individual and group interviews with a total of 96 students. Interviewed students had been identified by faculty as representative of their school's population. Group interviews were conducted to ensure a level of comfort among students, to provide opportunities for their reactions to one another's responses, and to enable me to corroborate the reliability of their responses by confronting variations as they emerged and by probing for deeper understanding. Students interviewed had been enrolled in their school for at least one year to ensure their familiarity with the school culture. Where additional understanding was necessary, I conducted individual interviews. I developed a protocol for the student interviews with questions that focused on what students perceived worked and did not work to help them learn in their school, how they thought they had changed since being in the school, and their postgraduation plans.

Depending on the preference of the participants, I used one of two recording techniques: (1) I took notes by hand or (2) I tape recorded the interviews and transcribed them later.

Observations

I conducted formal and informal observations of the school including classrooms. Formal observations included faculty meetings at which issues of student affiliation, student intellectual development, pedagogy, and curriculum planning and review were major items on the agendas. I observed classes for evidence of teaching strategies designed to affiliate students with their school and promote intellectual development. In my classroom observations I also focused on student learning that reflected intellectual development. I observed student assessment events for data on student outcomes. Informal observations I made included “hanging out” in places where informal interactions among students and teachers occurred so as to gather information about the roles and relationships among students and teachers.

School Documents and Artifacts

School documents and artifacts illuminated and deepened my understanding of the organization and operation of each school, its value system, and its achievements including student outcomes. Documents I reviewed included teacher and student schedules, curriculum and course bulletins, graduation requirements, samples of student work, and statistical data such as attendance reports, student surveys, graduation rates, and state test results.

Survey

Adapting questions for a student survey from the student questionnaires used in the *Wisconsin Youth Survey, High School and Beyond Study of 1980*, and the *National Longitudinal Study of the High School Class of 1988*, I targeted questions to elicit students’ perceptions of their affiliation with the school, their intellectual development, their relationship with teachers, and the pedagogy they were exposed to. The survey was administered to all juniors and seniors who had been enrolled in each school for more than one year, for the purpose of broadening the response base of students.

Analysis

I coded and triangulated multiple sources of data and multiple methods of inquiry from each of the three cases according to categories embedded in the research questions (Merriam, 1988). The multiple sources of data triangulated included students, faculty, the researcher, and school documents. Multiple methods included interviews, a survey, the researcher’s observations of school practices, and the researcher’s review and analysis of school documents. Analysis of the data proceeded from the evidence within each theme. I analyzed the findings within and across the schools to deter-

mine (1) what organizational and pedagogical variables seem to increase students' chances for school success and (2) what the relationship was among these organizational and pedagogical variables. I developed a written interpretative account and submitted it to each school's principal for the purposes of assuring accuracy and corroboration on the plausibility of interpretations. Revisions were made on the basis of their responses.

CASES OF THREE SCHOOLS

The study indicates that there is a reciprocal relationship among teacher learning, teacher practice, restructuring, and student outcomes. It indicates that the interaction of these variables produces practitioner knowledge that teachers use to the benefit of student outcomes. Positive student effects illuminated in the study included improvement in graduation rates, course pass rates, college admission rates, and academic course-taking rates. In each of the three schools teachers' learning was from the outset driven by their aspirations for specific student effects. In order to achieve the student effects the teachers developed and implemented practices that drew on their school's culture, their knowledge of their students, successful practice, and their content area. In each case teachers made changes in their teaching practice and in school and curricular organization. In two cases the changes were initiated by individual teachers. In one, a physics teacher launched a collaboration with colleagues to form a self-contained interdisciplinary cluster. In the second case, a teacher created a course to scaffold a college course students were taking. In the third case, the changes emerged from a whole-school restructuring effort that included changes in English and math curricula and instruction to align them more closely with how students learn.

As the teachers involved in the innovations implemented them and reflected on their impact on student learning and achievement, they learned more about which pedagogical and organizational structures worked to improve student performance. Teachers' learning about student learning and achievement led to further pedagogical and organizational changes. In each case the teachers shared student outcomes and their practice with other faculty in school-wide forums designed for public sharing. Over a period of several years, evidence of improved student outcomes eventually persuaded the entire faculty at each school to adopt these organizational and pedagogical innovations on a school-wide basis.

In each school a constellation of nine conditions made these changes possible: (1) incentives for teacher inquiry, (2) opportunity for teacher inquiry, (3) teacher capacity for leadership in innovation and inquiry, (4) respect for teacher authority, (5) flexible school structure, (6) responsive and supportive administration, (7) sufficient time, (8) sufficient resources,

and (9) regulatory flexibility. In each school the changes occurred somewhat differently. Next I will explore each school's process.

International High School

International High School (IHS) at LaGuardia Community College began in 1985 as a New York City Board of Education and City University of New York collaboration aimed at increasing access to higher education for at-risk students. Located in the industrial section of Long Island City within view of the mid-Manhattan skyline, International is situated on the architecturally avant garde, concrete campus of LaGuardia Community College. Although International's offices and many of its classes are squirreled into windowless cubby-hole rooms along a couple of basement corridors of a building that was once a factory, its students have access to the college's spacious, well-appointed gymnasium, modern science and computer laboratories, and well-stocked art rooms where most art, math, science, and physical education classes are held. Additionally, students use the college library, TV studio, cafeteria, auditorium, other large spaces, and recreation areas including an Olympic-size swimming pool.

The school's mission is to foster social responsibility, intellectual development, and the "linguistic, cognitive, and cultural skills necessary for [students'] success in high school, college, and beyond" (*The International High School Mission Statement*, 1985). In order to achieve this mission, teachers developed a pedagogy that included a trimester organization, 70-minute periods, team teaching, heterogeneous grouping, an ESL approach to English language learning, an interdisciplinary approach to curriculum, a career education program that features three semesters of internships in the community, activity-based instruction, and collaborative learning that brings together in small groups students who speak different languages, giving them a reason to have to help, teach, and learn from one another and to speak English, which is the language of public discourse.

Five years after the school began and with the encouragement of his principal, David Hirschy, a veteran high school physics teacher who previously had taught in traditional settings, convinced three colleagues and the school's assistant principal to join him in the creation of an innovation called the Motion Program. As described in an earlier study (Ancess & Darling-Hammond, 1994a), the Motion Program, developed by Hirschy and colleagues, was a self-contained, interdisciplinary theme-based cluster—a sort of temporary mini-school—with its own teachers and students who met each day, all day, for the duration of a single trimester. During the course of the program, the five-member teaching team took responsibility for the students' total education. The Motion faculty had the autonomy and authority to make decisions about scheduling, students' assignment to classes,

curriculum, instructional strategies, assessment, discipline, and the social needs of students. Their meetings to assume these responsibilities occurred during the weekly 90-minute block already in place for the school's regular faculty meetings.

Motion teachers designed three courses that constituted the curriculum for the program: literature, integrated math/physics, and Project Adventure, an indoor ropes course modeled on Outward Bound. The literature and Project Adventure courses met for 70 minutes while the math/physics course met for 140 minutes. Motion curriculum emphasized the development of students' critical and creative capacities and peer collaboration. Literature, math/physics, and Project Adventure activities were all connected to each other and to the theme of motion. Students collaborated on experiments that helped them understand the principles of Newtonian physics and they demonstrated their knowledge and understandings in prose as well as visually on graphs and charts and mathematically in formulas. Literature assignments required students to create original stories in which they used their conceptual understandings of literary form as well as their learning from math, physics, and Project Adventure. For one fiction-writing assignment students were required to use Einstein's theory of relativity. In Project Adventure's team- and trust-building activities, students used their bodies to apply the laws of motion and emotion.

The small size and self-contained and collaborative structure of the cluster enabled the Motion faculty to develop and implement a "fail-one-fail-all" grading policy in which students received a single letter grade that combined all three courses in the cluster. Therefore, in order to obtain credit for any one course, students had to pass all the Motion courses. In order to determine the cluster grade for each student, all of the Motion teachers had to come to consensus. This policy, teachers claimed, produced higher course pass rates in difficult subject matter than any of them individually had experienced when teaching solo. It did this, they asserted, by discouraging students from making private bargains with themselves to do less, marginal, or failing work in courses that required them to struggle. Despite students' resistance to the policy, no students failed the Motion cluster. In instances where students could have opted for a failing grade, they chose instead an incomplete and elected to take the cluster of courses again.

The Motion faculty developed and implemented an assessment system that enabled them to closely monitor students' progress. The system included group exhibitions; individual student portfolios; self-, peer-, and teacher-written evaluations; and individual evaluation conferences with a committee of teachers and peers. The group exhibition, called debriefing, encouraged students to strive for mastery of content and required collaboration to foster social responsibility. Debriefings occurred whenever groups com-

pleted a unit of activities. At debriefings, group members individually and collectively demonstrated their mastery of the activity's content by making an oral presentation to a teacher or other students. Teachers asked the group questions that spiraled in complexity and difficulty in order to assess students' level and depth of understanding of the content. Credit was given only to the group, not to individuals, and only when each member demonstrated an understanding of the concepts the activities were designed to teach. If any member failed to demonstrate such understanding, the group reengaged in the activities to improve their understanding and later submitted to another debriefing.

Several factors led Hirschy to initiate this innovation. He had long been eager to increase articulation between math and science, believing that many students avoided physics because they were intimidated by the mathematical background they thought the course required. If students understood that the mathematics they needed for success in physics would be integrated into the course, perhaps physics would be more accessible to them.

Then, Hirschy's years at International had brought him to the realization that the traditional lock-step approach required for the New York state Regents physics course was not working with the diverse, limited English proficient students in his classes. There were students who didn't understand when he lectured or conducted discussions. In International's heterogeneously grouped classes, students possessed various levels of skill, experience with science instruction, and content knowledge, requiring Hirschy to construct at least three different levels of lessons and assessments. Although he was willing to do the work, he was frustrated with the results because students were not succeeding at the rates he wanted. Nor were they achieving the goal of the Regents physics course, which is that all students arrive at the same place at the same time.

After reading about Uri Triesman's cooperative learning models that were especially successful with minority students and taking a summer institute to learn more about them, Hirschy was eager to apply the model at International. Simultaneously, he found himself wanting to elicit from his students the excitement, joy, and inquisitiveness he had observed in his wife's kindergarten students. The Motion Program, explained Hirschy, seemed to be a strategy that would enable him to consolidate these multiple goals. It could enable him, along with his colleagues, "to create a total educational experience [that would] broaden the context for students' learning and deal with the whole person," he said. It was Hirschy's hope that the cluster would become a vital learning community.

Seventy-five students enrolled in this trimester-long program, spending all of their time each day with the five-member Motion team. After a second trimester of the program, data revealed that student attendance

exceeded the average for the school and all of the 150 students who had participated in Motion passed. Hirschy and the math instructor observed that students worked on projects for as long as $2\frac{1}{2}$ hours without a break. The extended responsibility for students and the opportunity for teachers individually and collectively to know students well enabled the staff to apply more appropriate and intensive interventions in a more timely fashion to students who needed them. Students did not fall through the cracks. These results were constant over the next three years.

Motion's first-year results stimulated a desire in International's principal, Eric Nadelstern, to restructure the school into self-contained clusters modeled on the program. He arranged for Hirschy and colleagues to present their results to the IHS faculty and proposed restructuring International as a set of clusters prototyped on Motion. Despite Hirschy's status as Teachers' Union representative and the credibility of the Motion team, the faculty rebuffed the principal's proposal. Nadelstern interpreted their rejection as categorical resistance to external demands for change. Despite the Motion Program's results, some faculty were skeptical that the benefits of the change would be worth the projected turmoil of actually having to change their working conditions and practice. Others were satisfied with the status quo. Nonetheless, two other IHS teachers adapted the Motion model to form the inter-disciplinary Beginnings Program, which they team taught. The Beginnings Program, designed for students entering IHS, consolidated two existing theme-based courses, "Orientation to School and Society" and "Immigration," with the first course of the three-year sequence, Personal and Career Development Program. After Beginnings' first year, the two teachers added biology to the interdisciplinary mix and recruited another faculty member to teach it.

Hirschy and colleagues, who supported the principal's hopes to restructure the school into self-contained, interdisciplinary thematic clusters, continued to present Motion's results to the faculty, adding presentations by students and then distributing samples of student work that the faculty examined. Now other teachers at the school were impressed with the quality of students' work, with the students' presentations on their experiences in the program, and with their preference for the close family atmosphere the cluster structure provided and their belief in its capacity to generate better performance from them. Especially, other faculty were impressed by the authenticity of students' responses to questions they asked. When Nadelstern broached the topic of restructuring at the end of the second year, the majority of faculty members, by now persuaded of Motion's benefit to students, no longer objected to the idea of restructuring, but admonished him to slow his pace. Nadelstern backed off.

Then, in 1993, eight years after the creation of IHS, a majority of the faculty voted to restructure the school into six self-contained, autonomous,

interdisciplinary teaching teams comprised of six to nine staff members including teachers, teachers' aides, and a guidance counselor. A handful of teachers who had voted against the change had the option to transfer from the school, but chose to remain. After faculty self-selected their cluster teammates, those who had opposed the reform found themselves unchosen. Nadelstern clustered them together as a team so that he could support their development and so that their opposition would not burden other teachers. The new structure aimed to make International more intimate and to increase students' achievement. Each trimester, each of the six teaching teams is responsible for an autonomous, theme-based cluster consisting of 75–100 students who are divided into three or four classes, which are called strands. Strands range in size from 20 to 25 students. The entire school adopted the fail-one-fail-all grading policy.

After the first year of restructuring, the course pass rate for the entire school was up 5%. The school restructuring generated faculty learning, which resulted in changes in administrative roles, teacher accountability, student assessments, and standards for student performance. Nadelstern explained how the cluster structure made him and his assistant more accessible to support teachers' professional development and their efforts to promote students' intellectual growth. Because they now dealt, said Nadelstern, "With 6 teams rather than 50 individual teachers," they assessed the work of teams and the capacity of their interdependency to produce effective classroom instruction. With their supervisory responsibilities streamlined, they joined teams as teachers in order to model effective pedagogy for teams with less experienced teachers, to contribute their knowledge and skills in team conversations, and to provide encouragement and instructional support to the cluster of teachers who had opposed the new organization. Such interventions provided students with access to effective teaching and teachers with access to professional development designed to improve the delivery of services they were providing to their students.

Teachers interviewed asserted that the cluster structure provided them with more opportunities to assess the degree of students' intellectual engagement and affiliation. They asserted that the self-contained student grouping and the lower faculty-student ratio of the clusters increased the time and opportunities for access between faculty and students. They asserted that the increase of faculty interaction within the cluster coupled with a high degree of autonomy and control over their working conditions increased their opportunities to find diverse ways to take individual and collective responsibility for the progress and achievement of all students in the cluster.

Evidence of increased teacher accountability affecting student learning opportunities emerged at the close of the first year of restructuring. When one team was disturbed by a higher number of student incompletes than other clusters showed, they assigned themselves as mentors to each student who had an incomplete, even though none of the students was any longer

in the cluster. In effect, they committed themselves to working on their own time with former students in order to help them complete the work so that they could pass the cluster.

As the faculty began to examine student achievement more closely, their interest in exploring the idea of a coherent school-wide assessment system began to develop. Over the next three years the individual clusters developed multiple forms of authentic assessments and a faculty committee worked on developing school-wide coherence.

Hirschy asserted that the restructuring helped teachers support higher standards. As students completed activities in the Motion curriculum, teachers sought feedback on the supports needed for high-level performance. Through interactions with students, the Motion teachers realized that many of them did not have any images of what constituted excellent work. As a result the team developed a collection of student work that served as diverse and concrete benchmarks of excellence. Motion students were able to sift through a file of former students' work to see what excellence looked like. Other clusters added courses such as reading that students needed to perform at higher levels.

The curricular and structural autonomy of the new organization also contributed to increased levels of intellectual challenge to students. As students raised questions in the content areas, teachers encouraged their investigation. Student investigations led teachers to suggest that they develop activities that could teach their peers the lessons they had learned. Some of this peer-produced curriculum was regularly incorporated into the program.

Faculty learned individually and collectively that increased control over the conditions of their teaching and student learning could increase their control over the quality of student performance. More teachers learned from their own and their colleagues' practice how to increase intellectual challenge for students, they expanded their repertoire of social and academic intervention skills, and they learned how to design curricula that sustained high levels of student engagement. They learned that their analysis of the alignment of curriculum, instruction, assessments, and student performance could not only impact student achievement, but could improve their capacity for effective practice. They learned to look to their own practice as a powerful source of learning.

Urban Academy

At the time of this study Urban Academy (UA) was a ten-year-old school located in a comprehensive neighborhood high school in the Chelsea area of Manhattan. Two years ago, after the completion of the study, UA moved to Manhattan's most affluent neighborhood, the Upper East Side, where it shares a large high school building with six other autonomous, small schools. At its new location, UA shares one of the five floors in the building with an

elementary school. In addition to regular classrooms and a large office in which all UA staff have their desks, there are a number of specialized rooms such as a photography lab, art room, science lab, computer lab, and meeting rooms. All of the schools in the entire building share the cafeteria, a large auditorium, a newly renovated library, an art gallery and exhibition space, small performance spaces, a teacher center, and two gyms.

As a “second chance school,” which many of the students redefined as their “last chance school,” UA has been described by its deputy superintendent as “a school where bad kids go and become good. And if they go back to their former schools, they become bad again.” Ninety percent of UA students have had at least one unsuccessful experience in one or more of 35 other high schools. Sixty percent of the students transfer in from comprehensive, neighborhood high schools notorious for their violence and high failure and low graduation rates; 20% come from vocational or high-performing academic public high schools such as Bronx Science; and 20% are from private and parochial schools. Ten percent enroll directly from junior high school. Of the high school transfers, 20% come to UA after a superintendent’s suspension for violence or weapons’ possession and 25% have been “asked to leave” their former school for reasons of poor attendance or academic failure.

The UA faculty report that students’ prior school history includes one, or a combination, of these attributes: chronic cutting, dropping out, suspension because of violence against another student or a teacher, failing grades, patterns of not completing assignments, and depression. Students’ family circumstances vary: some have functional, supportive families; others have families that are dysfunctional or tragic. Those without any family at all live in group homes. According to Ann Cook, the school’s codirector, very few students enrolled at UA have well-developed academic skills; most arrive poorly prepared for high school work. All UA teachers confirmed that upon entry, students lack perseverance, time-management skills, or the habits of work necessary for school success. They have difficulty completing assignments in a timely fashion or at all and 10% have never read a book to completion.

Despite the academic and social history of their students, the UA faculty have ambitious goals for them. They aim to collaboratively “build the students’ facility to: explore ideas, conduct research, evaluate information, discuss ideas respectfully, develop new sources of fact and opinion, and present and defend their findings” (Urban Academy, 1991, unpaginated). UA’s priority is to prepare students for success in college and responsible participation in society.

In an earlier study on Urban Academy (Anness, 1994), UA’s codirector Herb Mack explained that the school is organized to enact its goals and enable students to meet its expectations:

[Urban Academy is] a people-centered educational community in which adults provide students with opportunities to learn and develop. . . . People are the most important thing. . . . Who we are and who we want to be drives the school. . . . Individual needs, not institutional needs drive the school. . . . Decisions are made around constellations of people-issues rather than external requirements.

UA is organized as though it were a single class of students with several teachers, all of whom reshuffle and then subdivide each semester into the variety of courses teachers teach and students select. The continual reshuffling generates multiple opportunities for multiple forms of access and interaction among the various members of the school community. UA keeps class size to under 20 students, which also increases students' access to teachers and opportunities for active class participation. Since UA is ungraded, the reshuffling enables students of different ages and grades to get to know one another well and form attachments to each other and the school community.

The instructional program is organized more like that of a college than a high school. Courses are not scheduled to meet daily, but several times a week. The time frames for classes vary from 55 minutes to $2\frac{1}{2}$ hours. Throughout the day breaks give students time to socialize and snack. As the ages, abilities, and class standings of students in college courses vary, so in UA's classes there is heterogeneous and inter-age grouping. Mack and Cook explain that the goal of the college-like organization was to ensure that course needs—i.e., what UA wants to accomplish with students—drive school structure, not the reverse. For example, if a course plans for students to spend time in museums and libraries, it can be scheduled for $2\frac{1}{2}$ hours two afternoons a week without disrupting the school or other classes.

In order to prepare students for success in college, UA collaborates with local colleges so that UA students can enroll in their courses alongside the colleges' own students. Enrollment in college courses takes the place of advanced placement courses but additionally makes college-going a concrete experience. If UA students lack college ambition, this experience forces them to reimagine themselves as college students. They learn firsthand what demands college courses make on them and what skills they need in order to survive and succeed.

At the inception of the college initiative, UA history teacher Avram Barlowe was assigned the role of UA liaison to the local Borough of Manhattan Community College (BMCC) in order to support the eight students in their first college course, and for UA faculty to learn about students' responses to the experience. Barlowe's teaching schedule was adjusted so that he could oversee the students enrolled in the course. Early on he learned that the students needed support to manage their college assignments. He began attending the

college course along with the students and met regularly with the instructor to explain students' learning and behavior needs, analyze the students' responses, discuss what the instructor wanted them to do, and suggest ways of structuring assignments. Back at Urban Academy, Barlowe transformed what was scheduled as an advisory class composed of college-attending UA students into the BMCC Homework Lab where he helped the students analyze the BMCC assignments and complete them.

The restructuring of Barlowe's schedule enabled him to learn firsthand what students needed for success in a college experience and to immediately apply that knowledge to his teaching practice in order to influence students' possibilities for achievement. Barlowe's flexibility and authority enabled him to invent the BMCC Homework Lab and teach students the skills they needed to succeed—the skills necessary for doing college assignments: outlining, drafting papers, revision, time-management, and perseverance. Barlowe christened the BMCC Homework Lab a “supply side course [because] it teaches students how to do the assignments for another teacher.” Barlowe supplied the students with the kinds of interventions, skills, supports, and monitoring that middle-class parents routinely provide for their children and that give them access to institutions of higher learning. Barlowe contends that the lab enabled a higher number of students to meet deadlines and achieve significantly higher grades. All of the students passed the BMCC college course, and the success of Barlowe's intervention made it possible to expand the opportunity to more students.

Seven years later, UA collaborated with four local colleges that enroll nearly three times as many UA students. Now, each year, 20% of UA's population is enrolled in college courses that include history, writing, literature, science, math, and world languages.

The BMCC lab class had a broad impact on the organization of instruction and on curriculum offerings at UA. At weekly staff meetings Barlowe discussed the students' responses to their college courses and the issues that emerged in the BMCC lab course. When his UA colleagues realized that the labs were enabling students to perform at higher standards, they were eager to attach lab courses to accompany demanding courses that they were teaching. The teachers recognized the lab as an intervention that could enhance both their teaching and students' learning opportunities. This convergence of professional self-interest and student benefit may have dispelled potential resistance to change. UA restructured its schedule in order to attach labs to courses that required students to read extensively and write analytic papers. By 1994 six UA courses had labs attached to them: *Civil Rights: History of the Movement*, *American History*, *The Economics of Money*, *Misfits in Literature*, *Children's Books: Are They for Children?* and *Issues*, a course in which students analyze and debate current events. Additionally, a weekly Homework Lab was scheduled for after school so that students could get help with homework assignments.

English and math teachers designed a second variation on the lab course, a content skills lab that expanded students learning opportunities. In Reading Lab, students are supported to develop a “reading habit,” which the UA faculty believes is necessary for success in college, and students also sharpen their literary analysis skills. In Math Lab, students have the opportunity to develop mastery of the basics such as fractions, decimals, percentages, proportions, and signed numbers at the same time that they are taking another, higher level mathematics course. As a result of this change, more students have access to high-stakes mathematics curriculum. Course-taking and passing rates over the duration of the study bear this out: 72% of UA students took courses in trigonometry, advanced algebra, and precalculus and 90% of these students passed at least one class.

Faculty members interviewed explained that labs increase students’ access to courses with complex content by teaching them the demands of rigorous coursework while simultaneously providing them with the habits necessary to meet rigorous demands. Students interviewed confirmed that assertion. One young man, who had been expelled at his former school for throwing a chair at a teacher, said:

I didn’t think I’d ever have confidence in writing papers. But now you know, like I’m slowly, I’m gaining confidence in writing because these teachers will sit down and they will help me. They will tell me the bad; they’ll tell me what’s good.

Another student, who had dropped out of her zoned high school prior to enrolling at UA, commented:

I picked up a lot of good habits. My work habits are improving and I’m slowly edging my way towards that big research paper. I’m kinda scared sometimes, but I think I’ve improved my chances. I feel more confident about applying to colleges that I wanna go to now, that I wouldn’t last year or the year before that.

Without the labs, asserted Cook, many of the courses UA offers would intimidate many of the students, demand more than they are capable of producing, require UA to lower their performance standards, or restrict enrollment to those few students who already have the skills necessary to meet the course demands.

One of the English teachers commented that when a lab is attached to her course, she feels more confident about giving more challenging assignments because she knows students will get the extra support needed to complete them. She also noted that labs encouraged some students to stretch themselves intellectually: “The *Misfits in Literature* course had a lot of reading and the labs helped the kids keep up with the writing. [The reading included novels such as *The Hunchback of Notre Dame*, *The Heart Is a Lonely Hunter*, and *Frankenstein*.] The labs allowed some kids to develop

their own papers adding extra components from my assignments.” For an assignment on Bernard Malamud’s novel, *The Fixer*, one student wrote an analysis combining three of six choices.

The success of the lab courses led to further restructuring as UA abandoned their advisories for Organizational Tutorials for all students. Organizational Tutorials provide those organizational supports students need to successfully complete the assignments in their classes, such as the conventions of writing (e.g., proper use of quotations), the organization skills for constructing a coherent paper, perseverance for revision, research writing skills, and the struggle to find their voice—figuring out what they want to say and crafting ways in which to say it. Students select their Organizational Tutorial teacher, and twice a week the class meets with that teacher, who is responsible for overseeing their students’ progress in their overall instructional program. Students’ course teachers also tell the Organizational Tutorial teacher what kinds of help they notice students need.

The Urban Academy’s adoption of the lab course as a strategy for raising academic standards for student performance points to teachers’ understanding of the interplay between pressure and support that is necessary for higher levels of students achievement to occur. It also represents their acceptance of the fact that without interventions, their students are highly unlikely to achieve at a high level. The evolution of the advisory into the Organizational Tutorial reflects the staff’s matured capacity to efficiently consolidate in one mechanism those supports necessary for student achievement: social, emotional, and academic support. Students’ needs for close enduring relationships with caring and supportive adults who know them well is met implicitly in the context of the Organizational Tutorial, the ostensible purpose of which is the improvement of student performance.

Hodgson Vocational Technical High School

Paul M. Hodgson Vocational Technical High School, composed of grades 9 through 12, is one of three vocational high schools in Delaware’s New Castle County Vocational School District. Located on 44 sprawling acres, Hodgson occupies a modern, two-story-ranch-style building. The impeccable condition and maintenance of the building and grounds send the message that this place matters.

The school’s landscaped entrance leads visitors to a large, carpeted, square-shaped mall with multileveled platforms surrounding a center staircase leading to the school’s second floor. Plaques honoring the teacher of the year and honor roll students over the years adorn the walls. Sports trophies, notices of upcoming events, and a listing of student government officers fill glass cases. Hanging from the balustrades of the second floor balcony are welcoming signs and a banner announcing Hodgson’s affiliation with the Coalition of Essential Schools.

Many of the school's 22 career programs radiate off the mall, including heating/ventilation/air conditioning, auto body, auto technology, carpentry, cosmetology, culinary arts, dental assisting, dental lab, early childhood, electrical trades, electronics, electrical trades, horticulture, information systems and services, medical secretarial, machine shop, maintenance technology, masonry, nurse assistant technology, plumbing, technical drafting, and visual communication (commercial arts). Drafting and technology courses are also offered.

The career training programs are well-appointed and rich in resources. Some spaces, such as the machine, electrical, and carpentry labs, are the size of small airplane hangers. Other career programs, such as dental lab, dental assisting, and nursing technology, are in smaller but equally well equipped spaces. The school's academic offerings include English, mathematics, science, social studies, Spanish, drivers' education, physical education, and special education technology-related courses. The recently constructed gymnasium complements several athletic fields on the school's grounds all of which support the school's 13 sports teams: football, soccer, volleyball, wrestling, baseball, softball, cheerleading, separate boys and girls basketball, spring and indoor track, and cross country skiing. The technologically modern library on Hodgson's second floor includes computer access to libraries around the state so that students can conduct computer searches for materials by author, title, subject, and words. Adjacent to the stacks there are several classrooms. One contains equipment for distance learning; another contains computers that students use for writing; and another has equipment for students to view videotapes.

Over the five-year period of the study (and beyond), restructuring occurred dynamically on several fronts, including organizational; instructional, curricular, and assessment; teacher role; organization of students and student support services; and decision-making process. As described in an earlier study (Acess & Darling-Hammond, 1994b), Hodgson, prior to restructuring, had a nine-period day and students were streamed into five tracks: advanced placement, college preparatory, vocational, general, and special education. Hodgson aimed to fulfill the stereotypical expectations of vocational schools: employment preparation for students who were thought to "lack the capacity" for college. Although special education students were fully mainstreamed in career programs, they remained in self-contained classes for academic subjects. The faculty functioned according to a hierarchical pattern in which authority descended from principal on down to assistant principals, departmental chairs, discipline deans, and teachers.

Changes that occurred through restructuring included (1) the establishment of a steering committee of teachers and administrators to oversee school governance, (2) the decision by Hodgson to become a Delaware ReLearning school and join the Coalition of Essential Schools (CES), (3) the development of specialized committees to oversee diverse school

initiatives such as the integration of academic and vocational curricula and learning and student assessment, (4) the formation of interdisciplinary teams on each grade, (5) the introduction of activity-based learning initiatives in the academic program, (6) the development of performance assessments in the academic program, (7) student advisories, and (8) a senior project as the first step toward graduation by exhibition.

Restructuring was stimulated by a combination of internal and external factors. A new principal, Dr. Steven Godowsky, was hired to lead the school, engage the staff in rethinking the school goals and practices, and initiate changes that would focus the school more on the learning needs of students and on raising expectations, especially academic expectations. Motivated by the change, the staff developed a mission statement in which they agreed to “provide a caring, cooperative community where all students are actively involved in integrated academic and vocational learning that encourages them to become self-disciplined, productive members of society” (Paul M. Hodgson Vocational Technical High School, 1991)

In order to generate interest in examining the school goals and practices and the CES principles, Godowsky sponsored morning and afternoon faculty “conversations” over a period of a year. These conversations became the forum for educational debate among Hodgson staff and the wellspring for the school’s restructuring efforts. They produced a critical core of teachers who became committed to and then led school-wide changes. Among the first outcomes of these conversations was the formation of a faculty committee to explore the possibility of developing a senior project that would integrate learning from career and academic programs and require students to demonstrate their mastery of this learning.

A district-wide voluntary desegregation initiative catalyzed school-wide detracking, heterogeneous grouping in academic classes, and special education inclusion in English and American history classes. Hodgson faculty agreed to adopt recommendations of the Southern Regional Education Board (SREB) to set higher academic standards and provide learning opportunities for vocational school students to increase their chances for academic success. These included academic and vocational education integration and advisories that would provide students with extra attention (*SREB High Schools That Work*, undated, unpaginated).

Although the organizational and instructional restructuring at Hodgson departed from the traditions and culture of the school, the curricular and assessment reforms were rooted in and built on them. Oddly, this made for a compatible coupling that used teachers’ experience and expertise while simultaneously requiring and generating new professional learning and practice. Beginning with the goal of raising students’ academic expectations and performance standards and using the strategies of academic and vocational integration and the CES idea of graduation by exhibition, a committee of Hodgson academic and vocational teachers developed the

Senior Project. The Senior Project is a performance-based project and assessment that requires seniors to:

- produce a research paper that expands their knowledge and abilities on a topic that interests them and is in the area of their shop major;
- design and construct a product connected to their research; and
- give a half-hour long public, formal oral presentation before a committee of three teachers in order to demonstrate their knowledge and understanding of the topic, the research, and the product.

The customized organization of the Senior Project required the restructuring of teachers' roles and the development of new teaching practices. One new role for teachers was that of advisor for the Senior Project. All Hodgson seniors selected a teacher to be their advisor for the Senior Project. Advisors met regularly and individually with each of their advisees. They supervised their advisees' progress, ensured that tasks were completed on time, oversaw revisions of work, rehearsed their oral presentations, coordinated with two other teachers on their advisees' Senior Project committee, mentored their advisees throughout the project's year-long duration, guided their use of the other teachers as resources, encouraged expanded learning experiences such as interviews with out-of-school experts, and provided interventions when necessary. The other teachers on the committee also met individually with the students, read and commented on the several drafts of their research papers, or supported the development of the product. These roles were radically different from what isolated, stand-up, direct-instruction academic and vocational teachers were used to.

Teachers learned these new roles through experience. For example, advisors learned to provide a structure for students to work independently. They developed mechanisms such as task time lines to prevent students from creating work pile ups. They learned to demand higher levels of self-challenge from students by negotiating with them to choose more difficult Senior Project topics and by helping them to revise their work. Several teachers brought these ideas to the Senior Project Evaluation Committee which, in response, created mechanisms such as a standardized time line and task check-off form to refine the project's functioning. Additionally, because teachers shared their experiences mentoring students, and learned what to expect and demand from students and how to effectively respond to their anxieties and needs, each new year of the project students' topics grew in sophistication and their work improved in quality.

The role requirements for teachers also blurred content area boundaries, particularly for vocational teachers who were uncomfortable expanding their educational reach into the foreign territory of academics. Although the shop

teachers were comfortable assessing the Senior Project products and guiding revisions, they were not comfortable assessing drafts of the research paper—even though they were required to review only the shop content of the papers. English teachers, therefore, assessed the drafts for proper conventions and mechanics although they lacked the expertise to evaluate the content.

In contrast, the curriculum and exhibition components of the Senior Project drew from successful Hodgson practices and traditions. The career/shop-based research paper was adapted by the English department from the traditional literature-based research paper that students had been expected write in senior English. Although the paper's content was a shop topic, students were nonetheless held to a rigorous standard of a thorough research process. The Senior Project research paper required students to learn and demonstrate appropriate understanding of research conventions such as the proper format for their citations and bibliography. It required them to use multiple sources of data and to represent their findings in multiple formats including prose, charts, tables, and photographs. Finally, the paper had to be typed. The English Chair explained that the connection between the paper and the product was natural because students were curious about the real-life application of their research.

The paper's success with the full range of Hodgson students, including mainstreamed special education students, made it popular with both English and vocational teachers, with the result that there was strong school and district level support for making it a component of the Senior Project and creating a one-semester technical writing course to allow English teachers to teach students how to write the Senior Project paper while they were engaged in the Senior Project. The content of the Technical Writing course drew on teachers' learning of what research and writing skills students needed in order to successfully execute the Senior Project paper. Because what students were learning had immediate, authentic, and personal application, students' motivation to learn these research and writing skills was heightened. Eventually, teachers compiled a bank of Senior Project papers that became exemplars of what was expected of students and what their peers had produced.

As teachers observed and evaluated students' performance of Senior Project tasks, they increasingly learned what students needed to know and be able to do to perform well. This knowledge enabled teachers to adapt their curriculum and expand students' learning opportunities, particularly in writing, in the earlier grades. Academic and vocational courses in grades 9 through 11 added research components and project-based curricular units. In order to help students develop oral presentation skills, teachers of an eleventh grade course called *American Experience* required students to produce a videotaped oral biography. Ninth grade interdisciplinary teams introduced both research papers and oral presentations in shop and English classes. Two years after what teachers described as an intensive emphasis on

writing beginning in the ninth grade, Hodgson ranked first in the state on the Delaware high school writing assessment.

The exhibition component of the Senior Project drew on the vocational education tradition of performance-based evaluation and applied it to academic learning. In their shop classes, students were used to being evaluated on their production of real products and teachers were familiar with performance assessment instruments. Drawing on a voc-ed rubric used for competitions, Hodgson teachers developed a rubric for the Senior Project that guided their evaluation of the oral presentations. The application of exhibitions to the Senior Project confirmed the belief of many teachers that performance assessments could more accurately demonstrate their students' academic knowledge and skills than the more conventional short answer, multiple-choice, norm-referenced tests used to measure students' learning.

As academic teachers saw the quality of the Senior Project exhibitions, some began to incorporate more projects and activities into their curriculum. In social studies/English classes some teachers provided opportunities for mock trials, simulations, and role playing of important historical events and situations. These performances also became assessments of students' learning.

Teacher learning about student learning became a lever for pedagogical reform. In a math integration initiative stimulated by district funding to improve students' mathematics performance, teachers learned how to create access to normally intimidating content by operationalizing their belief that vocational education could provide a context for improving learning in math. Math teachers visited shop classrooms and, while there, taught math that corresponded to shop units so that students learned math when they needed to know it for their shop projects. In this fashion, students approached roofing as angle and measurement problems, flower arranging as geometry, and photo enlargement as problems in proportion. In their own classrooms, math teachers began to use shop references to teach math—when teaching the slope of a line in algebra they could refer to the pitch of a roof—increasing students' access to mathematics.

The math integration project was facilitated by changes in the school organizational structure that made professional collaboration possible between shop and math teachers who got to know one another and learned about student learning and their colleagues' work through classroom visits, joint conversations, and curriculum development. After the initiation of the math integration reform, the math scores on the Delaware math assessment increased 13% over the previous year (New Castle County Vocational School District, 1994, p. 2).

Hodgson's reformed governance structure, in which teachers sat on curriculum committees that developed instructional policy, meant that teach-

ers applying pedagogical reforms in their classrooms could be and indeed were in positions to decide which instructional policies they would apply. The new organizational structure enabled them to use their observations and understandings about students' responses to the reforms to refine them and shape policy school-wide. Teacher policy making resulted in the school's adoption and the district's approval of the Technical Writing course and Senior Project as graduation requirements. Shortly after this recognition, the majority of Hodgson teachers urged Godowsky to transfer out teachers who still did not support the Senior Project and the direction the school was taking. Such teachers, reported Godowsky, disagreed with the new and expanded role for teachers and were unwilling to change their perspective.

Hodgson teachers and the school learned which organizational structures, which student and teacher learning opportunities, and which curriculum and teaching strategies could produce higher levels of academic achievement for students. They validated, and learned how to implement, a predominant pedagogical belief that students need to learn academics and can develop intellectually through a concrete approach to content that is more often restricted to vocational education. The organizational restructuring enabled the faculty to apply their knowledge of how students learn to their practice. And they began to shape pedagogical policy from the lessons of their practice.

Almost immediately after the inception of the restructuring, student outcomes began to change. In addition to Hodgson's top ranking on the Delaware writing assessment, the college admission rate for Hodgson students increased within a two-year period from 25% to 44%, which is 12.5% higher than the national average for vocational high school students *planning* to attend college (NCES, 1995, p. 40).

DISCUSSION

This study confirms the findings of Peterson, McCarthey, and Elmore (1996) that restructuring flows from good teachers' practice. It also confirms the findings of Lee, Smith, and Croninger (1995) that good practice and improved student outcomes flow from changes in structure. In other words, this study finds that there is a reciprocal influence among restructuring, teacher learning and practice, and student outcomes. In each of the schools in this study, restructuring occurred in order to expand "good" practice or practice that had been successful in improving student achievement. International High School restructured into theme-based clusters based on the model of the Motion Program. Urban Academy expanded on the concept of lab courses, creating more of them and developing a new model called an Organizational Tutorial. Hodgson restructured the organization of its

ninth grade and its curriculum throughout the grades in order to expand its intensive writing program.

On the other hand, good practice also emerged from restructuring. The governance restructuring at Hodgson first promoted the development and then the institutionalization of good practice such as the Technical Writing course and the Senior Project. The organizational restructuring at International and Urban Academy enabled teachers to develop new practices that the constraints of former organizational structures precluded. At International, the cluster structure enabled the Motion Program to develop a multifaceted assessment system that was necessary for the new, fail-one-fail-all grading policy that resulted in higher course pass rates. Urban Academy restructured its schedule in order to add lab courses enabling teachers to offer more rigorous content courses and more rigorous assignments.

These findings suggest that chicken-or-egg-first analyses may be erroneous in that the set of variables under examination—teacher learning and practice, restructuring, and student outcomes—are interconnected in an interdependent constellation and that their relationship varies in detail, is context specific, unpatterned, reciprocal, and dynamic rather than linear and static. Most likely there is no pattern across cases because the dynamic is driven by the pursuit of specific, contextually defined goals and in each case, while the overarching goals of supporting higher levels of student achievement were common to the schools, their specific goals were different. Teacher learning, teaching practice, and restructuring in such a context are strategies that require flexibility if the goals are to be achieved.

It seems too that although researchers tease away the parts from the whole for the sake of analysis to better understand them, we must remember that after the parts have been revealed and examined, it is important to resynthesize the whole to learn how everything works together. It is important to understand that the whole is greater than the sum of the parts and that the parts in action together will function differently than they do in isolation.

In this study teacher learning can be characterized as problem solving or inquiry that starts with teachers' particular goals for their students, with their theories about their particular students as learners, especially as relates to the particular goals, and their theories about what conditions are necessary for the students to achieve the particular goals. Hirschy theorized that many students were intimidated by physics because they were intimidated by mathematics. He also theorized that the teaching practices and curriculum he used in the past were inappropriate for many of his current students and for the class' heterogeneous organization. Keeping the students and their configuration constant, he had a vision of the organizational conditions for learning and the outcomes he aspired to: a cluster organization that increased teacher autonomy and responsibility for stu-

dents' total education and joyful student engagement and a physics course integrating mathematics in a supportive context that would make physics more accessible.

Barlowe theorized that his students lacked the study and organization skills and support structure necessary for college success. He theorized that interventions redressing these deficits would increase students' chances for college success. The enactment of the lab course, his intervention, led to his theory of "supply side teaching." His goal was to produce students who could be successful in college.

Hodgson faculty theorized that their students had not performed at high levels academically because they had not been taught in the way that they learn. They theorized that adapting successful vocational practices—which they also theorized would capture the way the students learn—to the academic sphere would improve academic performance. They saw their students expanding beyond the boundaries of conventional vocational education and stereotyped identities and entering academic and intellectual domains.

Implicit in each goal and theory was the identification of a problem or set of problems to be solved and the solution that teachers chose. These were applied to the pursuit of the goal. Except in Barlowe's case, the teachers' initial solutions extended beyond a single classroom and beyond changes in teaching practice. The initial solutions of Hirschy and Hodgson were simultaneously organizational, curricular, and instructional. But in all three cases teachers had the authority and autonomy to pursue the changes and the support of their principals and a critical core of peers to implement them.

In this study student outcomes, the quality of student performance, influenced restructuring, teacher learning, and teaching practice in powerful ways. Student performance mapped against the teachers' goals was the most powerful catalyst for teacher learning. It defined the content and determined the direction of teacher learning. Barlowe, Hirschy, and Hodgson faculty who were dissatisfied with the performance of their students brought their knowledge of their students to the problem of improving student performance, acquired new knowledge, and developed strategies to apply it to the situation. In different ways at each school, the educators' strategies involved new practice and new organizational structures. Opportunities for other teachers to learn the student effects of these strategies were incentives for innovation and catalyzed broader changes in practice. Ultimately student outcomes and opportunities for teachers to examine students' work and performance were the most powerful variables counteracting their resistance to structural and pedagogical change.

The findings of this study suggest that teachers' inquiry into their own practice with a particular set of students for whom they have set particular goals can be a rich source of teacher learning and a powerful opportunity

for improving student performance. The findings suggest that local and school-based standard/goal setting for student achievement can be a powerful incentive and tool for generating more effective teaching practice and school organization. The implications of this study argue for (1) customized school change, (2) high levels of school autonomy, (3) the communal organization of secondary schools, and (4) school change generated and forged by the school community itself.

The teaching changes in these three schools, the ways they took root in the school organization and culture, and the ways in which they were a fit give a glimpse of the importance of the connection between teachers and their school culture. They allow us to see the possibilities for broad-based, enduring change and reform and the importance of a capacity-building rather than mandates-policy environment. At the time of this study, both New York and Delaware had flexible policy environments that set frameworks for high student and school performance, encouraged local variation based on local culture, and acknowledged differences in the need for support and intervention.

As a ReLearning state, Delaware endorsed the principles of the Coalition of Essential Schools, which include site-based decision making. Rather than adapt a standardized model, the Coalition encourages schools to operationalize its organizational and pedagogical principles in ways that make sense locally. Even though Hodgson was subject to a desegregation mandate, the implementation strategy was not mandated. That was left to the school. New York schools were guided by the *New Compact for Learning*, the state manifesto for school reform, which espoused “top down support for bottom up reform” by establishing high standards and curriculum frameworks and encouraging local innovation and variation to achieve them. The New York policy envisioned a differentiated system based on acknowledged differences in local capacity that would generate differentiated levels of autonomy, support, and intervention. Schools with high level capacity could become, and International and Urban did become, Compact Partnership Schools affiliated with the New York State Department of Education. Compact Partnership Schools were given the authority to develop assessment and accountability systems that increased their capacity to provide an intellectually challenging education. As reported in a study by Darling-Hammond, Aness, MacGregor, and Zuckerman (1998), Compact Partnership Schools were freed of restrictive state regulations such as “narrowly configured seat time and credit requirements and many of the state tests that drive curriculum and pedagogy in the direction of multiple-choice teaching and learning” (p. 11). The policy environment in both states devolved much decision-making power to localities and the schools, the results of which we can see in the school-based reforms mentioned in this study: in each of the study schools, faculties created new courses, redesigned the

basis for awarding “credits” and grades, and designed and implemented assessments. The changes, which were initially stimulated by teachers’ desires to improve student performance, had the effect of increasing teacher, student, and school accountability. In this flexible policy context, school-generated reforms produced higher levels of student performance. This former policy environment, which stimulated high standards, stands in contrast to what is becoming tyranny in standards policy, which has eliminated the flexibility and autonomy that facilitated the successes we see in these schools.

In order to plumb the potential fruits of the reciprocity among teacher learning, teacher practice, school restructuring, and student outcomes more empirical studies need to be conducted. In particular, more studies need to be conducted of school faculties engaging in teacher learning that can be characterized as inquiry for the purpose of improving student learning and achievement. Such studies might illuminate effective strategies and conditions that promote teacher inquiry targeted to improving student learning across a school. Further examination of how the relationship among teacher learning, teacher practice, school restructuring, and student outcomes actually looks in diverse schools can help school practitioners and reformers reflect critically on their own circumstances, on what they need to do to become their own change agents, and on what their schools need in order to be organizations that can learn by changing (Lieberman, 1995).

References

- Ancess, J. (1994). *Inquiry high school: Learner-centered accountability at the Urban Academy*. New York: NCREST, Teachers College, Columbia University.
- Ancess, J., & Darling-Hammond, L. (1994a). *Teaching, learning, and assessment for new English learners at International High School*. New York: NCREST, Teachers College, Columbia University.
- Ancess, J., & Darling-Hammond, L. (1994b). *The senior project: Authentic assessment at Hodgson Vocational-Technical High School*. NY: NCREST, Teachers College, Columbia University.
- Darling-Hammond, L., Ancess, J., MacGregor, K., & Zuckerman, D. (1998). *Inching toward systemic reform: How the Coalition Campus Schools are reinventing high school*. Unpublished report, NCREST, Columbia University, New York.
- Elmore, R. (1995, December). Structural reform and educational practice. *Educational Researcher*, 24(9), 23–26.
- Elmore, R., & Associates. (Eds.). (1990). *Restructuring schools: The next generation of educational reform*. San Francisco: Jossey-Bass.
- Fullan, M. (1982). *The meaning of educational change*. New York: Teachers College Press.
- International High School. (1985). *Mission statement*. New York: Author.
- Lee, V. E., Bryk, A. S., & Smith, J. B. (1993). The organization of effective secondary schools. *Review of Research in Education*, 19, 171–268. Washington, DC: AERA.
- Lee, V. E., & Smith, J. (Fall 1994). High school restructuring and student achievement: A new study finds strong links. *Issues in Restructuring Schools*, 7, 1–5.

- Lee, V. E., Smith, J., & Croninger, R. G. (Fall 1995). Another look at high school restructuring: More evidence that it improves student achievement, and more insight into why. *Issues in Restructuring Schools*, 7, 1–10.
- Lieberman, A. (1995). Personal conversation.
- McLaughlin, M. W. (Fall 1994). Somebody knows my name. *Issues in Restructuring Schools*, 7, 9–11.
- Merriam, S. B. (1988). *Case study in education: A qualitative approach*. San Francisco: Jossey-Bass Publishers.
- Murphy, J. (1991). *Restructuring schools: Capturing and assessing the phenomena*. New York: Teachers College Press.
- National Center for Education Statistics (NCES). (1995). *Trends among high school seniors, 1972–1992*. Washington, DC: US Department of Education.
- New Castle County Vocational Technical School District. (1994). *New Castle County Vocational-Technical School District performance report*. Wilmington, DE: Author.
- Newmann, F. M., & Associates (1996). *Authentic achievement: Restructuring schools for intellectual quality*. San Francisco: Jossey-Bass.
- Newmann, F. M., & Wehlage, G. G. (1995). *Successful school restructuring: A report to the public and educators*. Madison, WI: Center on Organization and Restructuring of Schools, the University of Wisconsin.
- Paul M. Hodgson Vocational Technical High School. (1991). *Paul M. Hodgson Vocational Technical High School brochure*. New Castle County, DE: Author.
- Peterson, P., McCarthy, S., Elmore, R. (1996, Spring). Learning from school restructuring. *American Educational Research Journal*, 33(1), 119–153.
- Sarason, S. (1982). *The culture of school and the problem of change*. Boston: Allyn & Bacon.
- Tyack, D. (1990). Restructuring in historical perspective: Tinkering toward utopia. *Teachers College Record*, 92(2), 170–191.
- Urban Academy. (1991). *Why? The Urban Academy brochure*. New York: Author.

JACQUELINE ANCESS is associate director of the National Center for Restructuring Education, Schools and Teaching (NCREST) at Teachers College, Columbia University. Formerly she was a teacher, school director, and district administrator in the New York City public school system. Her specialization is school reform.

OECD's Teaching and Learning International Survey (TALIS) provides the first internationally comparative perspective on the conditions of teaching and learning, providing groundbreaking insights into some of the factors that lie behind the differences in learning outcomes that OECD's Programme for International Student Assessment (PISA) has revealed. It is noteworthy that female teachers report using structuring and student-oriented practices more often than their male counterparts and are also more likely to say that they engage in co-operation with colleagues (Table 4.3 in the main report).