Leadership Lessons from Curricular Change at the University of California, San Francisco, School of Medicine

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Abstract

After successive Liaison Committee on Medical Education accreditation reports that criticized the University of California, San Francisco, School of Medicine for lack of instructional innovation and curriculum oversight, the dean issued a mandate for curriculum reform in 1997. Could a medical school that prided itself on innovation in research and health care do the same in education? The authors describe their five-phase curriculum change process and correlate this to an eight-step leadership model.

The first phase of curricular change is to establish a compelling need for change; it requires leaders to create a sense of urgency and build a guiding coalition to achieve action. The second phase of curriculum reform is to envision a bold new curriculum; leaders must develop such a vision and communicate it broadly. The third phase is to design curriculum and obtain the necessary approvals; this requires leaders to empower broad-based action and generate short-term wins. In the fourth phase, specific courses are developed for the new curriculum, and leaders continue to empower broad-based action, generate short-term wins, consolidate gains, and produce more change. During the fifth phase of implementation and evaluation, leaders need to further consolidate gains, produce more change, and anchor new approaches in the institution. Arising from this experience and the correlation of curricular change phases with leadership steps, the authors identify 27 specific leadership strategies they employed in their curricular reform process.

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The University of California, San Francisco, School of Medicine (UCSF) has been a world leader in biomedical research for decades, yet the same could not be said for its educational programs. Although the school had excellent teachers and well-managed, departmentally based courses, Liaison Committee on Medical Education (LCME) site visit reports repeatedly criticized the UCSF curriculum for lack of innovation and oversight, citing numerous gaps and redundancies in content. For example, the 1964 LCME site visit report to the dean expressed deep concern about the "failure to find stimulating, progressive, exciting, forward-looking thinking expected in a school located in a community otherwise full of vitality, of surging growth. Absence of deep positive commitment to an educational philosophy—with relative abundance of resources—is a matter of concern to the survey team, to the university, the profession, and the taxpayer."[1] The 1996 LCME site visitors similarly criticized the curriculum, which they informally referred to as a "headless monster" because no one appeared to be in charge.

The UCSF curriculum at that time was a traditional two-year preclinical and two-year clinical program. The first year was composed of departmentally run courses covering fundamentals of structure and function, and the second year focused on disease process and therapeutics, organized primarily around a series of organ system units. Formally scheduled coursework averaged 32 hours per week. Required clinical clerkships ran through the entire third year and two months into the fourth year, which concluded with mostly elective rotations. After the LCME site visit in 1996, the curriculum committee surveyed the faculty to determine whether they would support designing a new, integrated sequence of block courses across the first two years of the curriculum. Faculty resoundingly defeated the proposal, in large part because of the lack of central leadership and the frustration of repeatedly fine tuning the first two years of the curriculum in the face of an ossified clinical curriculum.

In response, the dean recruited a new leadership team and tasked them with improving UCSF's educational programs. Since 1998, under the guidance of this leadership team, UCSF has been transforming its curriculum and, as a result, curricular and instructional innovations have blossomed.[2] At the outset of the reform, we based the initial planning process for change on best practices in curriculum development.[3–6] Now, having completed the process of curriculum reform, we describe five phases of curriculum transformation that we actually used: establishing a need and foundation for change; creating a vision for a new curriculum; designing and obtaining approval for the new curriculum; developing new courses; and implementing and evaluating the new curriculum. In the course of this endeavor, we learned critical lessons about the kind of leadership that is necessary to accomplish such change.

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Although we drew on aspects of other relevant leadership models,[7–9] Kotter's model,[10] drawn from business management, most closely resembles our own experience. His model parallels much of what Bland and colleagues[11] describe in their review of the curriculum change literature, and it has been applied to principles of scholarship in medical education.[12] The five phases of curricular change we followed at UCSF connected well to Kotter's eight-step leadership model, as shown in Table 1. In our experience, the first phase of curricular change is to establish a compelling need for change; necessarily, Kotter argues, leaders must create a sense of urgency and build a guiding coalition to achieve action. The second phase is to envision a bold new curriculum; leaders must develop such a vision and communicate it broadly. The third phase is to design curriculum and obtain the necessary approval; this requires leaders to empower broad-based action and generate short-term wins. The fourth phase is to develop specific courses in the new curriculum; to accomplish this, leaders must sustain the strategies from the previous phase while also consolidating gains and producing more change. The fifth phase of implementation and evaluation requires the final additional leadership strategy of anchoring new approaches in the institution.

In this article, we describe each of the five phases of curriculum reform, correlating Kotter's eight steps of leadership within the framework of these phases (see Table 1), and we identify 27 leadership strategies (see List 1). We hope that our experience with leadership and curricular change will be useful to others planning to undertake curricular transformation.

Phase 1: Establishing a Need and Foundation for Change

To identify unmet needs and new opportunities,[8] we assembled all the data on the existing UCSF curriculum, developed an educational mission and outcome objectives, and created planning guidelines. These guidelines included integrating basic, clinical, and social sciences; basing curriculum and evaluation on competencies; promoting student well-being; and using educational technologies. The dean appointed three task forces to work on this phase. Curriculum committees and department chairs approved their findings in the spring of 1998. As a result, we had a new educational mission, a good understanding of our current curriculum, and principles to guide the development of new curriculum. This phase of curricular change involved two of Kotter's leadership steps.

Step 1: Establish a sense of urgency

Kotter asserts that leaders must perceive the need for change and build a sense of urgency among their followers. In our case, 30 years of inertia and resistance to change in undergraduate medical education came to a head with the 1996 LCME report, which galvanized the dean and provided a rallying cry for change. The dean's recognition and ongoing articulation of the need to change was the precursor to action and a continual reminder of why change was necessary.

To address those who wished to delay change, we posited that the new curriculum should be in place for at least one year before the next LCME site visit, which was scheduled for 2002–2003. This established a short timeline for implementing change and was a powerful argument for rapid action.

Step 2: Create the guiding coalition

The dean recruited a new vice dean for education (D.I.) in 1997 and charged him and his newly appointed associate dean for curriculum (H.L.) with the responsibility for carrying out this educational change, along with the chair of the curriculum committee. Early on, the two education deans were joined by several distinguished teachers: an internist, a neurologist, and the curriculum committee chair, a psychologist. Together, they formed the core visioning team. This team led

Table 1

Relationship Between Kotter's Eight Leadership Steps* and the Five Phases of Curricular Change Experienced at the University of California, San Francisco, School of Medicine, San Francisco, California, 1998–present.

	Phases of Curricular Change				
Leadership Steps	Establish need for curricular change (1998)	Create a vision for the new curriculum (1998)	Design curriculum and obtain approvals (1999)	Develop courses (2000–2001)	Implement and evaluate new curriculum (2001–present)
1. Create sense of urgency	X				
2. Create a guiding coalition	X				
3. Develop a vision and strategy		X			
4. Communicate the vision for change		X			
5. Empower broad-based action			X	X	
6. Generate short-term wins			X	X	
7. Consolidate gains and produce more change				X	X
8. Anchor new approaches in the institution					X

* *Source:* Kotter JP. Leading Change. Boston, Mass: Harvard Business School Press; 1996.

the process of evaluating the existing curriculum, establishing outcome learning objectives for the new curriculum, and developing planning guidelines in the winter and spring of 1998. In the fall of 1998, they expanded the leadership to include exceptional educators in biochemistry, epidemiology, and pharmacology. Throughout this article, these two distinct ad hoc leadership teams (the original visioning team and the second, expanded team) will be called the visioning and development leadership teams, respectively. These teams offered oversight to multiple, time-limited groups that worked on specific tasks associated with curriculum development. Together, the visioning and development leadership teams comprised the guiding coalition.

As one of the first actions toward educational change, the education deans and the chair of the curriculum committee revised the role of the curriculum committee from a relatively passive deliberating group to an action-oriented, policy-setting body leading curriculum change. The committee created a five-year schedule for curriculum reform, an annual agenda of initiatives, and task forces to address each aspect of curriculum development. The education deans provided administrative support to the working groups and to the curriculum committee.

Phase 2: Creating a Vision for a New Curriculum

The second curricular change phase involved creating alternative future scenarios for the curriculum through two independent task forces. The first task force, which we called Greener Pastures, developed recommendations for improvements through incremental change; the second, called Blue Skies, envisioned a radically new and innovative curriculum. The idea for appointing two alternative groups came from the way that high technology companies develop new products using "skunkworks"—small ad hoc teams that work intensively and independently for short periods of time to create a new product competitively.[13]

At the 1999 UCSF leadership retreat, participants (who included deans, department chairs, directors of research unit and education programs, elected faculty representatives, and other invited guests) prioritized recommendations from both task forces, endorsing most of the Blue Skies and many of the Greener Pastures recommendations. One of the creative recommendations from the Blue Skies task force involved establishing an academy of medical educators to promote interdepartmental education, support the teaching faculty, and encourage educational innovation and scholarship. This proposal was enthusiastically endorsed and immediately funded. The Haile T. Debas Academy of Medical Educators was formally established in 2000, began inducting new members and funding innovation grants in 2001, and emerged as a strong partner in the change process.[14,15]

The vision that emerged from these task forces was a student-centered curriculum that would use case-based instruction and educational technology, include small-group collaborative learning, promote early clinical skill development, and encourage self-directed learning and scholarship. The central tenet was to integrate the basic, clinical, behavioral, and social sciences across the four-year curriculum, as advocated by *Healthy People 2010* [16] and the Institute of Medicine.[17] Two of Kotter's leadership steps were integral to this phase of curricular change.

Step 3: Develop a vision and strategy

The final compelling vision for a new curriculum arose out of the work of the two task forces and the priority setting at the leadership retreat. As part of this planning process, the education deans encouraged task force members to contact colleagues at other medical schools with different curricular models, garnering exciting new ideas, an awareness of the competition, and a better sense of what might be possible. Additionally, through the work of the task forces, the education deans were able to identify faculty advocates for change and emerging educational leaders. Throughout this process, the dean remained engaged and supplied the necessary resources. His support provided a priceless pool of optimism and a backbone of commitment to ensure success in the face of the inevitable challenges and roadblocks in the process of curricular change.

Step 4: Communicate the vision for change

The 1999 leadership retreat offered an opportunity to communicate the vision for the new curriculum and to engage the key leadership of the school in the process of change. During the retreat, we asked participants to cast votes in favor of both the model of reform and specific curricular components that they preferred. By charging the task forces with developing two differing approaches to change and presenting these alternative choices, we had eliminated the option of voting for no change; by asking each retreat participant to vote on specific curricular options, we built buy-in to the overall plan. The new vision for the curriculum that emerged from the retreat created a great deal of excitement and was a bold departure from the existing curriculum. Propelled forward by this new vision, the key ideas were communicated broadly, through education committees, meetings of department chairs, and departmental meetings. Leaders in curricular reform played important roles in communicating the vision and excitement to their respective chairs.

Phase 3: Designing and Obtaining Approval for the New Curriculum

The leadership teams appointed faculty members and students to four task forces to create the structure for a new curriculum based on the priorities established at the leadership retreat. Task forces worked on the Essential Core (preclerkship courses), Clinical Core (required third-year clerkships), Advanced Studies (fourth year), mentoring, and scholarship.

The new curriculum was to be a dramatic departure from the old curriculum at every level. In the new Essential Core curriculum (the first 18 months), integrated block courses approximately eight weeks in duration would replace single discipline courses. The Essential Core curriculum would prepare students for the clerkships, beginning with a Prologue course that would provide an overview of how physicians view the human body, and ending with an Integration and Consolidation course that would reach back to material covered throughout the block courses, reviewing key concepts, integrating content, and consolidating students'

understanding. The second year would end in March, and core clerkships would start at the end of April.

The third-year Clinical Core curriculum would be restructured into eight-week blocks and would include three interspersed one-week Intersessions and a Longitudinal Clinical Experience (LCE) of one half-day, 22 times a year. Intersessions would bring all students back to campus to explore clinically relevant topics such as ethics, clinical decision making, advances in medical sciences, and health policy. For LCE, students would select an ambulatory preceptor to work with, who would provide insights into clinical practice, longitudinal supervision of clinical skills development, and one-on-one mentoring.

Advanced Studies would be a full fourth-year curriculum designed around rigorous advanced clinical clerkships, with plentiful time for exploring career options, electives, and/or scholarly activity. It would provide an opportunity for in-depth experience in a thematic area of interest through the Area of Concentration program, and it would conclude with Coda, a course in preparation for students' transition to internship. The Area of Concentration program, much like college minors, would provide structure for sustained interdisciplinary projects in six thematic areas: community health and social advocacy, global and public health, humanities and social sciences in medicine, medical education, the health care system and the physician–leader, and the science of medicine and the physician–investigator. Students would work with faculty advisors to select preparatory elective courses, engage in a project, and produce a tangible legacy in a scholarly manner, such as in a scientific paper, an exhibit, or a curriculum module.

In May 1999, the leadership team submitted a 12-page outline of the new curriculum to the department chairs and deans for their endorsement. However, the chairs requested more time for consultation with their faculty and more specificity in the proposal, particularly concerning content in the proposed Essential Core. In response, the education deans spent several months presenting the vision for a new curriculum at department meetings, communicating a strong rationale for change, and listening to concerns. At the same time, the education deans activated key teaching faculty members within each department to communicate the urgency for change and the specifics of the proposed curriculum to their chairs and department colleagues. This effort created a nucleus of supportive, engaged chairs that proved critical throughout the change process. One of Kotter's leadership steps was important to this phase of curricular change.

Step 5: Empower broad-based action

This extensive design process was a major undertaking and engaged more than 100 faculty members, students, and staff. While attempting to build a broad base of support, the leadership team not unexpectedly ran into critics. For example, a highly respected physician–scientist and superb teacher challenged us to streamline the planning process and to create a new curriculum that didn't dumb down the content. We engaged him in the challenge, and he worked creatively with the development leadership team during the fall of 1999, reshaping the preclinical disciplinary courses into eight integrated, interdisciplinary courses organized around both organs and themes, such as cancer. The outcome of this planning phase was a 32-page proposal for the Essential Core curriculum that was approved by the course directors, the department chairs, the curriculum committee, and the faculty council in December 1999 and January 2000.

Phase 4: Developing New Courses

Although the task forces completed course development for the streamlined Clinical Core in six months, it took 18 months to develop courses for the new Essential Core. To guide course development, the leadership team established curriculum-planning guidelines based on learning principles and a commitment to continuous quality improvement. For example, core courses would focus on the general professional education of the physician; integrate the teaching of basic, clinical, and social sciences; emphasize active and collaborative student learning, and limit formally scheduled class time to 24 hours per week, with no more than two hours per day for lectures.

Armed with curriculum-planning guidelines, multidisciplinary course committees went to work creating new courses in the Essential Core curriculum. This involved not only taking existing curriculum content and fitting it into new courses, but also deleting, adding, and resequencing content, as well as reconsidering examinations. These committees learned to work collaboratively across disciplinary boundaries and to negotiate relative emphases in content, teaching methods, and assessment practices. Two more of Kotter's leadership steps were key to this phase of curricular change.

Step 6: Generate short-term wins

At each step in the process, we celebrated our successes and focused everyone on the road ahead. In a variety of meetings and retreats, we recognized small victories, creative endeavors, and effective leaders with motivational speeches, awards, t-shirts, and treats. For example, we celebrated the departmental chairs' endorsement of the curriculum, its successful approval by faculty council, the development of our college advisory system, the inauguration of the academy of medical educators, and students' participation in all aspects of the change process. Students became ongoing change agents, helping us refine, validate, and communicate our curricular efforts, so we called them our curriculum ambassadors.

A critical moment in the change process occurred at the annual curriculum retreat in the spring of 2000. Dr. Ed Hundert, who had just led the University of Rochester School of Medicine and Dentistry through exciting curricular reform, spoke to the assembled faculty and students. He validated the wisdom of making dramatic change before perfection was attained, invoking the concept of rapid prototyping. He described how high technology companies aim for 70% success before distributing a new product, because rapid feedback from consumers provides more efficient quality improvement than internal design. Dr. Hundert enthusiastically promoted risk taking without having to get it 100% correct. This reduced our faculty's and students' levels of anxiety about trying something totally new and was an important message to carry forward because,

inevitably, not all aspects worked perfectly the first time through.

Step 7: Consolidate gains and produce more change

As the number of course-development groups proliferated, the curriculum committee and the education deans recognized the need for an accountable, focused oversight body to manage the work flow. Thus, a steering committee was formed to supervise course development actively. The committee was composed of the development leadership team plus the chairs of each task group; it reported to the curriculum committee and the associate dean for curriculum. Subsequently, as we implemented the curriculum, we split the oversight and policy-setting committee into two separate bodies, one each for the preclerkship and the clinical curriculum.

A cyclical process emerged during course development. The oversight committee developed general educational principles for course development, and the curriculum committee approved them. The education deans and curriculum committee appointed focused working groups to hammer out details and make specific recommendations for course development. These recommendations came back to the oversight and curriculum committees for further guidance. Finally, the working groups completed the design process and forwarded the final proposal to the curriculum committee for approval. This flow balanced a somewhat cumbersome broad-based oversight process with highly efficient and rapid small-group work.

Phase 5: Implementing and Evaluating the New Curriculum

The new Clinical Core curriculum was implemented in July 2000, followed by the new Essential Core curriculum in September 2001. Advanced Studies commenced for fourth-year students in July 2004 with the inauguration of Areas of Concentration.

While implementing the new curriculum, we addressed a number of challenges. In the Clinical Core, we asked pairs of clerkships to integrate programs within the eight-week block that they shared, but only psychiatry and neurology remain integrated. Complexities of scheduling and differences between clerkship cultures proved the downfall of several other attempts at pairing (e.g., surgery with anesthesia; family and community medicine with surgical specialties). In the Essential Core, a number of issues arose: sequence, integration, and balance of content among disciplines in less time; and assessment through integrated course exams. Pedagogic challenges included recruiting and retooling faculty members to lead small-group discussions and facilitate PBL. The larger block courses placed increased responsibility on course directors whose roles expanded to include substantial oversight and work across departments. To address these challenges as they arose, we provided faculty development, facilitated sharing and problem solving among block course directors, and sought student feedback about problems and solutions.

While we implemented the new curriculum, we monitored the educational process and outcomes. Our students sustained their high performance on the USMLE, and their fourth-year comprehensive clinical skills exam scores increased slightly over previous years. We saw improvements in course evaluations, faculty and resident assessment of student preparation for the clerkships, recruitment of top applicants to UCSF because of the curriculum, and engagement of students in curricular improvement. There was a dramatic expansion of educational innovations and educational scholarship, fueled by both curriculum reform and the Academy of Medical Educators. Finally, we received accolades from the LCME in 2003, with commendations for the visionary leadership of the dean, the office of medical education, our innovative curriculum, the exciting use of educational technology, and tight curricular oversight. We applied one final leadership step from Kotter's model during this phase of curricular change.

Step 8: Anchor new approaches in the institution

With centralized curricular oversight and integrated block courses, the traditional department ownership of preclerkship courses had to change. The basic science and clinical department chairs proposed a structure for sharing and maintaining stewardship of newly integrated courses. Course leadership was linked to departmental stewardship, which included dedicated administrative support for the courses.

One of the challenges of initiating a new curriculum concerns how to communicate it to potential applicants. Anticipating applicant anxiety about a new, unproven curriculum, we invested heavily in communicating with prospective students, including arranging meetings between each applicant and students working on the new curriculum. Our students conveyed the excitement of the new design and the message that we were seeking students with a pioneering spirit. Those who were inclined to feel that they would be guinea pigs were encouraged to consider a different school. At matriculation, we emphasized this pioneering spirit and invited entering students to collaborate with us to make UCSF the best possible educational experience.

Similar to the experience of schools preceding us in curricular reform, we found that our second-year students, who were the last in the traditional curriculum, felt neglected and resented the resources directed at the new students. We learned to recognize their frustrations and to communicate more often with them. The first year under the new curriculum model was a long year in which second-year students, who had experienced, and remained in, the old curriculum, were unable to provide the usual informed, encouraging big-sibling mentorship to the pioneering first-year students.

To further anchor the change in our institutional culture, we expanded resources for education. Central administration and departments committed funds to provide faculty time for course development and curricular oversight and student stipends for work on the curriculum. Resources came from a substantial increase in UCSF allocations for education, larger alumni giving to education, and grant support for curriculum development. Additionally, we invested in a new clinical skills center and implemented Web-based course delivery and electronic evaluation systems. We designed an advisory college structure, with funded mentors to support students' progress through the new curriculum and facilitate early feedback on their experience with it. All of these investments helped change the

culture, infusing it with excitement and commitment to medical student education.

Examining Our Process of Curricular Change

Medical education has a long history of undertaking and examining curricular change.[9,18,19] Our experience reinforces the findings that staged curriculum change, coupled with leadership, can help even a resistant school succeed at curricular reform. Through an invigorated curriculum committee, strong central leadership, and use of multiple, sequential task groups, we forged a collaborative spirit of common purpose, vision, and change, and we slew the headless monster.

Although previous authors have identified factors for successful change[9] and have proposed new organizational structures,[20] we would like to share specific leadership lessons that might be useful to others. We discovered that oversight committees should not be made up exclusively of course directors if transformative change is desired. Thus, we created two new steering committees to provide policy, oversight, and direction for course and clerkship committees and to report to the curriculum committee.

To keep the numerous task groups moving ahead, we committed leadership and additional staff resources to these efforts. The associate dean for curriculum increased her leadership time from 50% to 75% and assumed the primary role of orchestrating the planning process, with the vice dean for education playing a supportive and collaborative role (50% of his time). We funded faculty leadership for innovative development in the Essential Core, Clinical Core, and Advanced Studies curricula (10%–30% of their time). An administrative curriculum coordinator (100% of his time) oversaw communications, staffed the planning committees for the Essential Core, and provided instructional support to departmentally based administrative staff. In addition, we created a new office of medical education under the auspices of the vice dean for education, recruiting three people with PhDs in education to provide evaluation, research, and curriculum-development expertise. We formed an office of educational technology and added four new staff members. Finally, we opened a new clinical skills center dedicated to teaching and assessing clinical skills throughout the four-year curriculum. Although these resources exist in many institutions, they were not present before curriculum reform at UCSF, and they were generated in the spirit of transformative change.

This whole process involved all 27 leadership strategies outlined in List 1, beginning with the unqualified support of the dean. We also learned that major change shakes the foundation of the established order and generates uncertainty, anxiety, and turmoil. Leading the change process requires building confidence in the capacity for change. Faculty, staff, and students all experienced emotional reactions to this major change. For the faculty, curriculum transformation meant giving up their existing successful courses and committing to new and unproven courses. Letting go of the known for the unknown produced anxiety, especially when students' early feedback on some new courses was unfavorable. The 70% rule, along with leadership support in the face of early disappointments, gave us the confidence to innovate, weather challenges, and improve over time.

List 1

Leadership Strategies for Accomplishing Curricular Change, Organized Around the Eight Steps in Kotter's Leadership Model

1. Establish a sense of urgency
- Develop rationale and urgency for change
- Communicate need for change repeatedly

2. Create a guiding coalition
- Create and empower a small leadership team
- Identify motivated and energetic faculty to join broader working groups

3. Develop a vision and strategy
- Examine both incremental and transformative change options
- Expand search for new models outside institution
- Populate task forces with broad range of stakeholders
- Create organizational structures to support change

4. Communicate the vision for change
- Establish public forum to engage faculty and students in dialogue on new vision
- Identify priorities for change
- Communicate vision broadly
- Use key faculty members to articulate the vision within their departments

5. Empower broad-based action
- Appoint curriculum design teams composed of faculty and students
- Develop and communicate a comprehensive proposal for the new curriculum
- Obtain formal approval for the new curriculum

6. Generate short-term wins
- Celebrate small victories along the way
- Focus on rapid prototyping rather than perfection
- Invite external inspection and inspiration
- Build confidence in capacity for change

7. Consolidate gains and produce more change
- Appoint work groups to develop new courses
- Provide central oversight and direction to design teams
- Continue to produce innovations and more change

8. Anchor new approaches in the institution
- Distribute stewardship for parts of the curriculum
- Invite matriculating students to be pioneers in the new curriculum
- Attend to students finishing the old curriculum
- Incorporate faculty development
- Expand resources for curriculum innovation and change

Source: Kotter JP. Leading Change. Boston, Mass: Harvard Business School Press; 1996.

Understanding that with major change comes an initial dip in quality before exceptional performance is achieved can encourage participants to persist in the face of initial challenges.[21]

Although Bland et al's[11] review of the literature does not identify communication as essential to the process of curricular change, we found that no matter how much communicating we did, it was not enough. Communication became a central requirement for everyone involved in curriculum change. The reaction of department chairs in the spring of 1999 to our initial proposal forced us to engage actively in broad-based communication with department chairs and their faculty members. Finding ways to extend the flow of information from the core teaching faculty to the whole faculty was challenging but essential.

Because the status quo always trumps innovation, we had to find creative ways to overcome seemingly impossible constraints—real or imagined. The education deans invested a great deal of time in creative problem-solving at the broad conceptual and political levels as well as at the very specific and detailed content and pedagogic levels. We created collaborative processes in which each person's contribution was respected and affirmed, investing heavily in one-on-one mentoring of newly identified leaders, giving them organizational development skills, and providing all teachers with faculty development for their new instructional roles. We also sent teams of faculty to the Harvard Macy Physician Educators' course with assignments to improve selected aspects of the curriculum.

The excitement and creative ferment permeating undergraduate education at UCSF generated additional resources from the school, departments, development, and foundations. Faculty interest was high, and promising junior faculty began to compete for roles in undergraduate curricular work, which had not occurred before. Alumni have been stimulated and engaged, and many have volunteered to serve as preceptors and small-group facilitators. Since we began the change process, our faculty members have successfully obtained major extramural funding for focused aspects of curricular development.

In summary, UCSF has been transformed from an institution resistant to educational change to an organization vibrant with curriculum reform, instructional innovations, and educational scholarship. Students and faculty highly value the new curriculum, and students are performing well on all measures assessed. Each phase of curriculum reform, from creating urgency and vision to implementing and anchoring new approaches in the culture of the institution, required extensive leadership.

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